Knee Arthroscopy

PATIENT INFORMATION BOOKLET

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Foreword by Mr Kosuge

I would like to welcome you, and thank you for choosing me to be your surgeon. My goal is to ensure you receive the highest standards of care, whilst having a high-quality patient experience.

This patient information booklet is designed to support your journey through key-hole surgery to your knee (knee arthroscopy). The aims of this booklet are to:

- Help you make an informed decision.
- Improve your understanding of what a knee arthroscopy is.
- Help you prepare for surgery in the best way possible.
- Guide you through your hospital stay.
- Prepare you for going home after surgery.

It is essential that you actively take part in this process by familiarising yourself with the contents of this booklet. I believe that knowledge is powerful and will help enhance your experience, recovery and outcome. For further information, please arrange a consultation and/or visit www.denniskosuge.co.uk.

I always value your feedback so please do get in touch if you would like to.
I wish you all the best and hope you have a pleasant stay in hospital.

Best Wishes,

Dennis Kosuge
CONSULTANT HIP & KNEE SURGEON
BMedSci FRCS (Trauma & Orthopaedics)

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Educational Content

Do I need a Knee Arthroscopy?

Perhaps the most important part of this journey is to ensure that the treatment option of a knee arthroscopy is the correct one for you. There are several factors to take into account when making this decision:

- Your diagnosis — i.e. what is the cause of your pain?
- Have you considered alternative treatment options? — e.g. painkillers, keeping to a healthy weight, exercise and physiotherapy, knee injections.
- Do you understand the potential benefits, risks and side-effects of all treatment options?

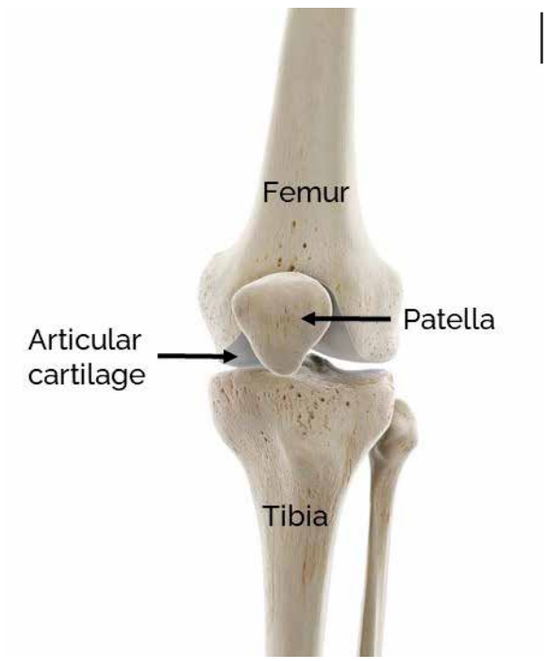
You may be reading this booklet because you feel alternative treatment options have been exhausted and that your knee problems continue to have a significant impact on your quality of life. For example:

- You have severe knee pain that limits your everyday activities.
- You find it hard to walk for any meaningful distance.
- You experience mechanical symptoms such as a catching pain or locking of your knee.

At your initial consultation with Mr Kosuge, the above will be explored with you. Reading this booklet will also help with your decision-making process.

What is a Knee Arthroscopy?

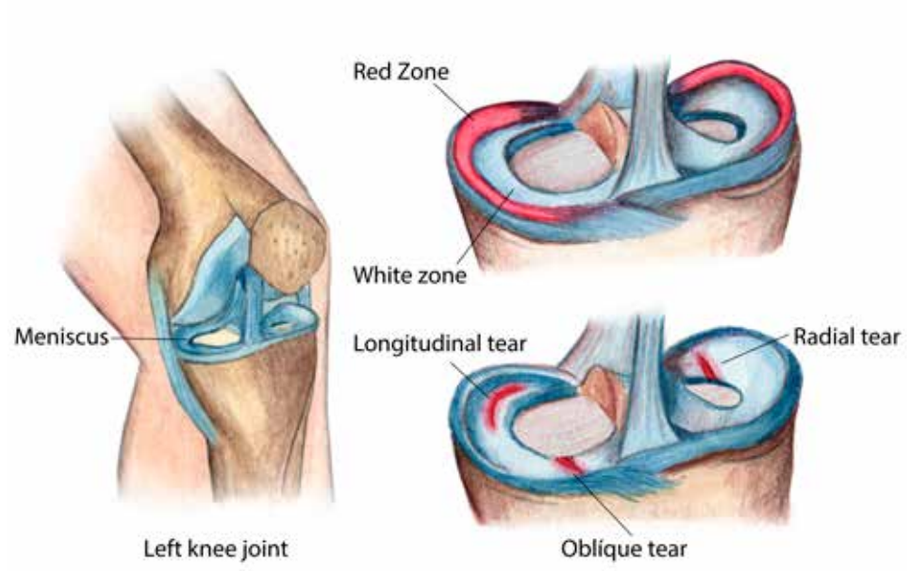
The knee joint is a hinge joint between the lower end of your thigh bone (femur) and the upper end of your shin bone (tibia). The kneecap (patella) is the smaller bone that forms the front part of your knee joint. Your knee joint allows you to bend and straighten your leg. To a much lesser extent, your knee joint also allows your leg to twist.



Front view of the bony structures of a left knee.

The ends of the femur and tibia (and the under surface of your kneecap) are covered by a thick layer of a smooth and slippery surface known as articular cartilage. The wearing of this articular cartilage is known as osteoarthritis. Occasionally, damage to your articular cartilage may occur following an injury (chondral defect). Sometimes, an injury to your articular cartilage could also involve the underlying bone (osteochondral defect).

Within your knee, there is another type of cartilage known as the meniscus. The meniscus is C-shaped, sits between articular cartilage of your thigh bone and the articular cartilage of your shin bone. You have one on the inner side of your knee (medial meniscus), and another on the outer side of your knee (lateral meniscus). The menisci help distribute load and weight going through your knee, act as shock-absorbers and cushions your articular cartilage from damage. You can tear your meniscus following an injury to your knee (meniscal tear).



Illustrative view of the knee depicting where the menisci sit in relation to other structures.

Note the different types of meniscal tears that can occur.

A knee arthroscopy involves looking into your knee joint using a small telescope. It allows a thorough examination of your knee joint during which small procedures can also be performed. A knee arthroscopy may be used to carry out the following:

- Meniscal Repair
- Meniscal Trimming (Meniscectomy)
- Treatment of chondral or osteochondral injury
- Removal of loose body/bodies

There are many more procedures that can be carried out with knee arthroscopy. For more details, please do not hesitate to ask Mr Kosuge during your consultation with him.

Meniscal Tear
A meniscal tear often occurs following a twisting injury to your knee whilst your foot remains anchored to the ground. If you participate in sports that involve repeated squatting manoeuvres, sudden stops and turns, you may be prone to injuring your meniscus.

You may experience some or all of the following symptoms if you have a meniscal tear:

- Localised pain in the area of your meniscal tear.
- Pain made worse with twisting movements of your knee
- Difficulty straightening your knee fully.
- Feeling as though your knee gets locked in place when you try to move it.
- Feeling of your knee giving way.

Where a meniscal tear occurs is one of the most important things that affect healing. Tears of the outer edge (red zone) tend to heal well due to a good blood supply whereas tears of the inner edge (white zone) tend not to heal due to a bad blood supply.

A meniscal tear in the red zone may heal with non-surgical treatment. If a tear does not heal and continues to cause you significant problems, it can be treated either by stitching the torn meniscus back together (meniscal repair), or by trimming the torn part of the meniscus (meniscectomy). Your age, your health, your normal activity levels, the quality of your meniscus, and nature of the tear (size & location) will affect which option would be most suitable if you choose to have surgery.

Meniscal Repair
If the quality of your meniscus is good and the tear is in a location where there is good blood supply (red zone), your tear may be amenable to a meniscal repair. A meniscal repair involves inserting stitches which close up and hold the torn part of the meniscus.

As the torn meniscus is stitched back in this surgery, the success of is dependent on whether the tear then heals or not. To protect the repair, you will be provided with a knee brace to wear after surgery:

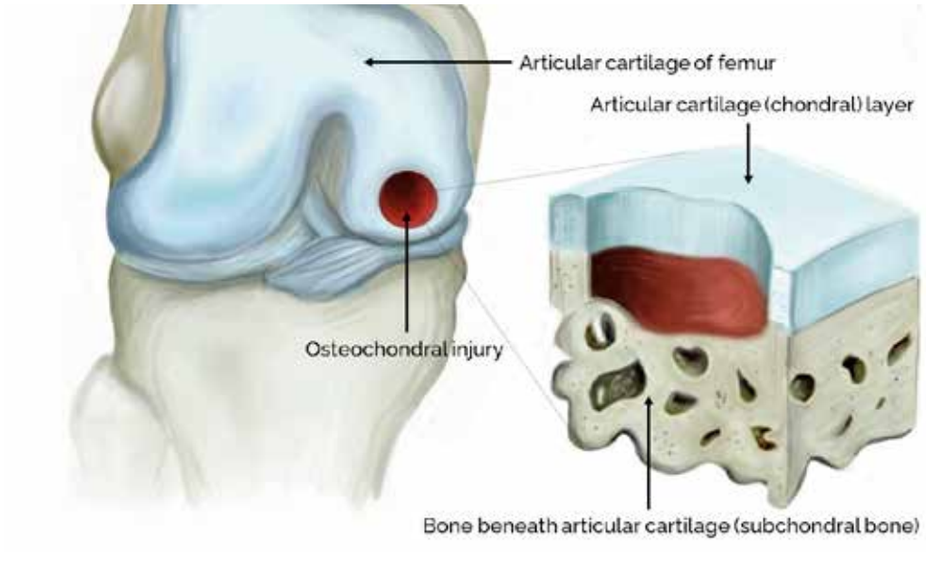
- **For the first 6 weeks** — walk fully weight-bearing with knee brace locked with your knee fully straight. You will be allowed to bend your knee from 0 to 90 degrees when not walking.
- **6 to 12 weeks after surgery** — the brace will be unlocked to allow you to bend your knee when you walk. As you recover more, you will be able to wean yourself out of the brace. You should avoid deep squats until 12 weeks after surgery.
- **12 to 16 weeks after surgery** — you may begin low-impact exercises such as cycling, swimming, and use of exercise machines.
- **After 16 weeks** — you may resume all activities, including high-impact sports.

Meniscal Trimming (Meniscectomy)
This involves trimming the torn section of the meniscus back to healthy, stable meniscus. This option will be more suitable if your meniscal tissue is of poor quality, and/or if the tear is in an area where the blood supply to the meniscus is not good (white zone).

Because the meniscus is an important structure in your knee, removing part of it may increase your risk of developing arthritis in the future. However, if a repair is not possible, removal of part of the meniscus may be the only option to help improve your pain.

Compared to a meniscal repair, your recovery will be quicker. You will be allowed to move your knee with no restrictions after surgery. Most patients are at a stage where they can resume sports between 6 to 12 weeks.

For further information about knee arthroscopy, Mr Kosuge recommends:
Treatments — Knee Arthroscopy



Illustrative view of the knee depicting an osteochondral defect to the thigh bone (femur) and a focused view depicting the layers involved in the injury.

Chondral/Osteochondral Defect
A chondral defect involves focal damage to the articular cartilage. An osteochondral defect involves focal damage to the articular cartilage and underlying (subchondral) bone. These defects can affect your thigh bone (femur), shin bone (tibia) or your kneecap (patella). Majority of these defects are caused by injury but some can be caused by long-term wear and tear of your articular cartilage.

You may experience some or all of the following symptoms if you have a chondral/osteochondral defect:

- Dull ache and swelling affecting your knee joint.
- Pain worse with weight-bearing activities.
- Feeling as though your knee gets caught or locks up.

The treatment of chondral/osteochondral defects can depend on the size and location of the defect. In general, defects on the end of your thigh bone (femur) are the ones with the best outcomes whereas defects on your shin bone (tibia) and kneecap (patella) are harder to treat with less reliable results.

Surgical treatment options can include:

- Shaving out the flaps of cartilage on the surface.
- Removal of loose cartilage. As your articular cartilage has a poor blood supply, the cartilage is not often viable when it is separated from the bone.
- Fixation of loose cartilage/bone. An osteochondral defect may be large enough to be fixed with screws or stitches.
- Drilling of underlying bone (Microfracture) to encourage blood flow and a healing response for deeper defects.
- Grafting of healthy cartilage plugs from a non-weightbearing area of your knee joint and transferring these plugs into the defect in a mosaic pattern (Mosaicplasty).
- Implantation of cartilage cultured from healthy cartilage cells harvested from your own knee. This is a two-stage procedure as the cartilage is harvested in the first procedure and the laboratory cultured cartilage is then implanted in a second procedure requiring open surgery (not key-hole).

Removal of loose body/bodies

Loose bodies are small fragments of detached cartilage or bone that float in your knee joint. Loose bodies may be a consequence of an injury or due to diseases such as arthritis.

You may experience some or all of the following symptoms if you have a loose body:

- A catching sensation or pain.
- Feeling as though your knee gets locked in place when you try to move it.
- Swelling affecting your knee joint.

The treatment of loose bodies can depend on its size and location. If small, or in a location where it is not floating freely in your knee joint, it may not cause any major symptoms and can often be left alone. Symptomatic loose bodies can be removed surgically and this can be done through key-hole (arthroscopy) in the majority of cases. If the loose body is larger than a key-hole surgery scar, a larger (sometimes separate) scar may have to be made to retrieve the loose body.

Alternatives to Surgery

Prior to considering a knee arthroscopy, alternative treatment options must be explored. These include:

- Painkillers.
- Exercise & Physiotherapy.
- Weight management.
- Knee Injection.

By the time you are seeing Mr Kosuge, it may well be that some or all of the above options have been tried and proven to be unsuccessful in helping with your knee pain. Alternatively, the above measures may not be acceptable to you, in which case a knee arthroscopy may be an option to explore.

For further information about alternatives to surgery, Mr Kosuge recommends:
Treatments — Non-operative

Consent

Your agreement and consent to a knee arthroscopy is essential. In order for you to consent, you will need to understand the potential benefits, risks and side-effects of a knee arthroscopy as well as any further procedures that may be required as a result of complications.

Potential Benefits

The degree to which your symptoms improve will depend on the findings during surgery. To help with the likelihood of success, your adherence to the rehabilitation programme is crucial.

Potential Risks

All surgery and anaesthetics carry risks. Although most people undergoing a knee arthroscopy experience no significant complications, these still do happen from time to time. The risk of any complication after knee arthroscopy is estimated to be 1 in 100. Some of these risks can have a significant impact on your life, or even be life-threatening.

The chances of risks occurring vary between patients. Factors that can affect likelihood of risks include your age, other medical conditions you have, your weight, smoking and alcohol intake.

Specific Risks of a Knee Arthroscopy

- Swelling.
- Bleeding and bruising.
- Stiffness.
- Infection.
- Progression of cartilage damage.
- Ongoing knee problems.
- Injury to structures caused by surgery.
- Nerve injury.
- Blood vessel injury.

Specific Risks of procedures performed during Knee Arthroscopy

- Increased risk of arthritis (Meniscectomy).
- Failed repair requiring further surgery (Meniscal Repair).
- Failed treatment for articular cartilage problem (Chondral/Osteochondral defect)

General Risks of Surgery

- Blood clots in the deep veins of your legs and/or lungs.
- Death.

Specific Risks of a Knee Arthroscopy

Swelling
As the knee joint does not have a lot of tissue covering, swelling within the knee joint is very noticeable. The swelling that occurs after surgery is due to blood that has accumulated in the knee joint and also due to your tissues absorbing the fluid that is pumped into your knee during surgery. The generalised swelling improves with time but can last for up to 4 weeks after surgery.

You may also develop localised swelling around your scars and although these tend to improve with time, you may end up with some permanent swelling beneath your scar(s). This will not affect the way you move your knee.

Bleeding and bruising
This is when blood collects beneath your wound and within your knee joint. All patients will have an element of this but this usually stops within the first few days after surgery. You may develop a bruise around your knee after this. Occasionally, blood may continue to accumulate and lead to a significant painful swelling in your knee.

This may settle with time, or lead to your wound(s) to weep (which increases risk of infection) and at times, require further surgery to remove the build-up of blood.

You are at more risk if you take regular blood thinning medication or have a bleeding disorder.

Stiffness
The combination of swelling and scar tissue formation can make it challenging for you to perform the rehabilitative knee exercises after surgery. This in turn, can lead to stiffness. Very rarely, stiffness can become a long-term issue despite intensive physiotherapy. In that scenario you may require further surgery to remove the excessive scar tissue within your knee.

That is why it is very important to keep your knee moving and adhere strictly to the physiotherapy exercises in the early stages after surgery.

Infection
Early infection can occur in the weeks following surgery. The infection may be superficial (affecting the wound itself) or deep (affecting the knee joint). With a superficial infection, treatment will involve a course of antibiotics. With a deep infection, a further key-hole operation(s) is required as antibiotics are not able to remove the bacteria that has accumulated in your knee. The bacteria can cause damage to your articular cartilage and increase your risks of developing arthritis. The operation will involve washing your knee joint with copious amounts of fluid. This will be followed by a long course of antibiotics given through your veins.

You can help reduce the risks of infection by ensuring you are as healthy as possible. Any medical conditions should be well-controlled (e.g. diabetes), weight loss should be attempted if appropriate, smoking and alcohol intake should be assessed and acted upon.

Progression of cartilage damage
A knee arthroscopy is not good treatment for arthritis. However, many patients who undergo knee arthroscopy have some early arthritis. Very occasionally, the instruments used to perform key-hole surgery irritate your articular cartilage. Sometimes, this could lead to arthritis advancing more rapidly than it would have without surgery.

Very rarely, a condition known as spontaneous osteonecrosis of the knee (SONK) can develop after surgery. This is where there is spontaneous death of your bone cells, leading to inflammation in your bones. This can lead to a much more rapid deterioration in your articular cartilage.

Ongoing knee problems
After recovering from surgery, you may find that it has not helped with your knee pain. One of the commonest reasons for this is the presence of arthritis that cannot be addressed by knee arthroscopy.

There are times when patients with arthritis may have additional problems that can be improved with knee arthroscopy. In these cases, some of your pain may improve but pain from your arthritis will persist.

Injury to structures caused by surgery
Inserting instruments into your knee joint risks injuring structures such as the articular cartilage, meniscus, ligaments and tendon. As the procedure is conducted with a camera, injury is unlikely though.

Nerve injury
Very occasionally, nerves can be damaged or stretched during the operation. This can result in numbness in the knee, legs and/or ankle/foot. In addition, movements may be affected. This may or may not be associated with pain.

This usually recovers over a long time but occasionally, the effects of nerve injury may not fully recover and be permanent.

Blood vessel injury
This can lead to your loss of circulation in the affected leg and foot but is a very rare complication. If this happens, you will need surgery to restore the blood flow. Loss of blood flow can damage tissues such as your skin, muscles and nerves.

Specific Risks of procedures performed during Knee Arthroscopy

Depending on the reasons for your knee arthroscopy, the following may also apply:

Increased risk of arthritis (Meniscectomy)
One of the functions of your menisci is to distribute load within your knee evenly, and to act as a shock-absorber. As such, your articular cartilage is protected from damage and wear. Removal of your meniscus reduces this protection and puts you at more risk of arthritis. The more that is taken away, the more at risk you will be.

If repair of the meniscal tear is not appropriate, Mr Kosuge will trim the tear in a way that preserves as much of your meniscus as possible. However, in large tears, it may be that only a small amount of meniscus can be preserved.

Failed repair requiring further surgery (Meniscal Repair)
The success of a meniscal repair relies on the tear healing after surgery. If the tear does not heal, you will experience recurrent symptoms when the stiches used to repair the tear eventually fail. In that scenario, you may require further surgery to remove the torn part of the meniscus (meniscectomy).

Failed treatment of articular cartilage problem (Chondral/Osteochondral defect)
You may have ongoing pain if any procedures attempting to heal your chondral/osteochondral defect fails. For example, drilling of the bone (microfracture) is aimed at stimulating healing with scar tissue but this may not happen. In addition, any cartilage or bone grafting procedure (fixation, mosaicplasty, cartilage implantation) relies on the implanted graft to be incorporated by your body. This does not always happen. Failure of these procedures may lead to ongoing pain or the need for further surgery.

General Risks

Blood clots in the deep veins of your legs and/or lungs
Deep vein thrombosis (DVT) are blood clots that form in the deep veins of your legs. This can lead to a painful swelling of the affected leg. The concern about a DVT is that the blood clot can move, or a piece can break off and travel through the veins into your lungs to cause a pulmonary embolus (PE). A PE is a serious condition that can lead to breathlessness and chest pains. A PE can be life-threatening or can lead to long-term disability.

You will be prescribed special compression stockings to wear for a period of six-weeks after your surgery. Compression stockings are contra-indicated in some patients and if so, you will be advised not to wear them.

Movement encourages circulation and reduces the risks of these blood clots. After surgery, you are advised to get up as soon as possible. Whilst in bed, you should regularly move your ankles/toes. Drink plenty of water after surgery as well.

Death
Although exceedingly rare, death is a risk both during and in the months after surgery. It is more likely with increasing age, and in patients with medical conditions that affect the heart and blood circulation. Reasons for death can include heart attacks/angina, strokes or PE (see above).

The purpose of the pre-operative assessment clinic (PAC) is to assess your health and to recommend any investigations if it is thought that your medical condition(s) can be optimised before surgery.

Your Recovery and Expectations
Most patients have a straightforward and rapid recovery. However, despite best efforts, complications can occur that may significantly impact on your life and/or slow down your recovery.

You will experience discomfort around the knee once the anaesthetic wears off and this can be managed with a variety of different painkillers. The pain will improve day-by-day. There will be two (occasionally three or more) small scars in the front of your knee, either side of the midline. This scar will mature to form a fine white line over the course of a year and hardly be noticeable with more time. Some patients form a thicker scar known as a hypertrophic or keloid scar. You will have swelling in your knee that improves over the first 4 weeks after surgery.

In the first few days, you will feel more tired than usual and it can take up to 1 week before this feeling settles. Mr Kosuge recommends that you balance your activity during this period, have well-balanced meals (see 'Nutrition'), and ensure you sleep well.

Your investment in the rehabilitative knee exercises after surgery will help you recover more rapidly and reduce the chances of stiffness. If there are particular restrictions with range of motion or weight-bearing, Mr Kosuge and his team will inform you before you are discharged from the hospital.

It is estimated to take between 6 to 12 weeks to recover from a knee arthroscopy but this can be longer if you have had more complicated procedures done during the arthroscopy.

In terms of follow-up, you will have a wound review and removal of stiches at day 14 after surgery. Depending on where your operation is performed, this may either be with your GP Practice Nurse or with the hospital nurse-led clinic. Mr Kosuge will arrange to see you in the out-patient clinic 8 weeks after surgery.

Patient Reported Outcome Measures (PROMs)
Mr Kosuge collects information from you through heath questionnaires. This is so he understands how you are getting on, but also to ensure he can continue to provide high-quality care for his future patients.

Mr Kosuge will speak to you about this in more detail. With your consent, he will register your details on an online system that automatically e-mails the questionnaires to you at defined intervals before and after your surgery.

In addition to helping Mr Kosuge monitor his patients' progress, the data collected can be used for research. No patient identifiable details are used in these research papers or presentations.

Preparing for Surgery

Preparing your health
It is important to be in the best possible health before surgery. The following advice is to help you reduce your risks of complications:

- **Diet —** have a healthy, well-balanced diet in the weeks leading up to your surgery (see 'Nutrition'). If you need to lose weight, you may wish to use the time waiting for your knee arthroscopy to do so.
- **Smoking —** if you smoke, stop at least 2 weeks before surgery (see 'Smoking'). Smoking can increase risks of complications with the anaesthetic, and nicotine can interfere with tissue and bone healing.
- **Infection —** any infections (e.g. chest, urine) should be treated completely before surgery.
- **Skin —** if the skin around your knee is affected in any way (e.g. insect bite, cuts, rash, redness, psoriasis/eczema flare-up), your surgery will need to be postponed until this is settled so please do let us know if this is the case. If you have ulcerations in the same leg/ankle/foot, these should be treated and healed before surgery.

Pre-operative exercises
The aims of this are to:

- Strengthen your knee muscles and maximise your knee movements.
- Familiarise yourself with the exercises you will be asked to perform after surgery.

This in turn will speed up your recovery after surgery. Mr Kosuge understands that in certain cases, it will not be possible to tolerate some or all of the exercises. If this is the case, please do not worry.

For further information about pre-operative exercises, Mr Kosuge recommends:
Treatments — Knee Exercises

What to bring to the hospital

- This booklet.
- Loose day clothes.
- Slip-ons, trainers, sturdy lace-up or Velcro shoes. Avoid backless slippers.
- Personal toiletries, towels.
- Glasses, hearing aids, contact lenses.
- Mobile phone.
- Your routine medications.

Please remove any nail varnishing and piercings.

Preparation for Discharge
Knee arthroscopy is performed as a day-case procedure so you will be going home on the same day of your surgery.

Pre-operative assessment clinic (PAC)
Prior to your operation date, you will be booked into the nurse-led PAC. It is our opportunity to ensure you are as healthy as possible before surgery and to conduct tests such as:

- Blood pressure
- Blood tests (if necessary)
- Electrocardiogram (ECG) — heart-tracing (if necessary)
- Urine test
- Methicillin Resistant Staphylococcus Aureus (MRSA) swabs

You will be asked about your medical history and any medications you take. If there are issues identified, the PAC nurses will seek advice from an anaesthetist and further investigations may be arranged. Advice will be given to you about medications that may need to be stopped before your operation. You will also be given instructions on when to stop eating and drinking before surgery. COVID-19 precautionary instructions will also be provided.

Occasionally, problems are detected that we do not have the time to resolve before surgery. Your operation will need to be postponed until these problems have been resolved.

Hospital Stay

Eating & Drinking
Admission time of 07:00am on day of surgery:

- Make sure you do not have a very heavy meal the night before.
- You must not eat anything or drink any dairy products after 02:00am.
- You must not drink anything (including clear fluids) after 05:00am

Admission time of 11:00am on day of surgery:

- You may have a light early breakfast just before 05:00am.
- You must not eat anything or drink any dairy products after 05:00am.
- You must not drink anything (including clear fluids) after 09:00am.

Hygiene
It is important you have a shower on the morning of your surgery.

Your Hospital Admission
You will be informed of where and when you will be admitted. After your arrival, a nurse will run through a checklist and provide you with a gown to change into. You should remove contact lenses, dentures, wigs, hairpins, and jewellery including piercings.

Your anaesthetist and Mr Kosuge will review you before surgery. Mr Kosuge will be happy to answer any final questions you may have at that stage. The anaesthetist will discuss the anaesthetic options with you and how your pain will be managed afterwards.

When your surgical time nears, you will be escorted to the operating room.

Anaesthetic
All of our anaesthetists have the same goal of providing you with the best anaesthetic possible. There are several different types of anaesthetic that are available for a knee arthroscopy but in the vast majority of cases, a general anaesthetic is recommended. Every patient will have a unique set of medical issues and your anaesthetist will discuss anaesthetic options with you, along with the potential benefits, risks and side-effects of these options.

General Anaesthetic
This involves making you fully unconscious such that a breathing tube is placed through your mouth into your windpipe to help with your breathing. A general anaesthetic alone does not provide pain relief so you will need painkillers after the operation. A disadvantage of general anaesthetic is that the drugs used can make you drowsy, nauseated and vomit.

Local Anaesthetic
During the operation, Mr Kosuge will inject local anaesthetic into your knee joint as well as the tissues around your scar. This is an effective way of controlling pain and assists with early mobilisation of patients.

For further information about anaesthetics, Mr Kosuge recommends:
Preparing for surgery — Anaesthetic

During Surgery
To be able to visualise your knee joint clearly during a knee arthroscopy, a bloodless view is key. In order to achieve this, a padded inflatable tourniquet is applied to your upper thigh. Your leg is elevated to reduce the amount of blood in your leg and the tourniquet is then inflated.

When you wake up, you may feel some discomfort around your upper thigh as a result of this, but this tends to settle over the course of the same day.

After Surgery
The operation takes between 20 to 40 minutes in addition to the anaesthetic time of 20 minutes or so. You will be closely monitored in the post-anaesthetic care unit (PACU) – your nurse will be monitoring your heart rate, blood pressure, oxygen levels, as well as your wound dressing and pain levels.

You will be returned to the ward when the PACU nurses are happy you have recovered safely from your anaesthetic. The ward team will continue monitoring you closely.

Pain Relief
As a result of your anaesthetic, you should be relatively comfortable in the immediate post-operative period. However, Mr Kosuge recommends that you start taking regular painkillers so that when the anaesthetic wears off, you will already be seeing the effects of the painkillers.

It is reasonable to expect some pain as you have had surgery. However, if you are having trouble with the pain, please discuss this with your ward nurse and we will do our best to get it better controlled before you go home.

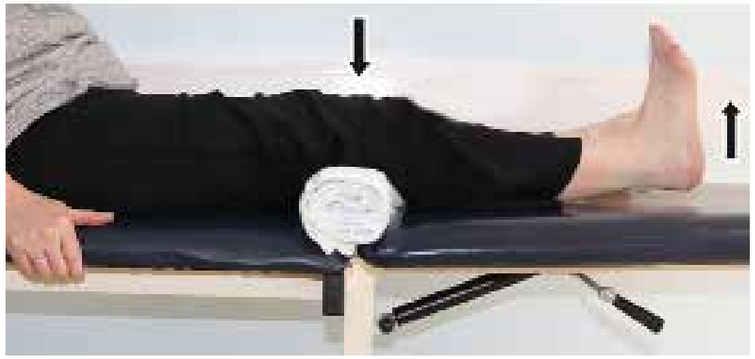
Rehabilitation
The aim of your in-patient care is to help you become independent so that you can function at home. By the time of discharge, you will be able to walk with crutches, negotiate stairs, be independent with the physiotherapy exercises, and your self-care.

Immediately after Surgery

Breathing – Immediate
After an anaesthetic, it is important to take some deep breaths to minimise fluid collecting within your lungs. Please take 5 deep breaths every hour and do so until you are walking on the ward.

Circulation - Immediate
It is important to commence circulatory exercises as soon as possible after your surgery. These can be performed when you are in still in bed and will reduce the risks of blood clots in your legs (DVT).

Slowly move your toes and ankles away from you so that you are pointing your toes, then pull your toes and ankles up towards you as far as you can. Repeat this 10 times every hour.



With your legs straight, pull your toes towards you and push your knees down firmly against the bed. Hold for 5 seconds, then relax. Repeat this 10 times every hour. You can place a rolled-up towel beneath your knee if you wish.

Mobilisation with crutches — once anaesthetic wears off
You will be encouraged to walk with crutches within your room and to the bathroom. You will be shown by the physiotherapist a safe way to do this.

You are normally allowed to put all of your body weight through the operated leg, *unless Mr Kosuge has requested otherwise.*

Ongoing Physiotherapy
Your physiotherapist will give you more detailed guidance on the specifics of all exercises and activities. You will be provided with instructions for a knee exercise programme that you should perform once you are home. Mr Kosuge recommends that you continue with the circulatory exercises for six-weeks.

Depending on the procedure performed and the hospital, you may be asked to return for out-patient physiotherapy sessions.

Checklist for Discharge

- Pain manageable.
- Physiotherapy discharge criteria met.
- No wound-related issues.
- Passed urine.
- Medically fit.
- Compression stockings to take home.
- Arrangements for wound review and stitches to be taken out at 2 weeks.
- Out-patient appointment with Mr Kosuge 8 weeks after surgery.

Once you are home, Mr Kosuge recommends that you take regular pain relief as prescribed and remain active — walk a little and often throughout the day. Whilst you should expect fluctuation between good days and bad days, the overall trend should be that you notice a gradual improvement week by week.

Recovery Milestones
The below is a guide rather than a prescription — every patient recovers at a different pace. *If you have had a meniscal repair or any procedures for cartilage repair, your rehabilitation will be different.* Should you have any queries, please do not hesitate to ask Mr Kosuge or a member of the physiotherapy team.

Week 1

- Continue to walk with crutches.
- Gradually increase your walking distance.
- Carry out the exercises prescribed by your physiotherapists four times a day.

Weeks 2 to 4

- Wean to walking without any walking aids.
- Gradually increase your walking distance.
- Carry out the exercises prescribed by your physiotherapists four times a day.

Weeks 4 to 12

- Wean to walking without any walking aids.
- Gradually increase your walking distance.
- Progress on stairs from one step at a time to regular stair climbing.

Activity	Timeframe (Approximate)
Walking	Day 0
Stairs	Day 0
Walking the dog	Weeks 1 to 2
Return to work[1]	Weeks 1 to 6
Static Bike	Weeks 2 to 4
Swimming[2]	Weeks 2 to 4
Driving (Left knee; Automatic car)[3]	Weeks 2 to 4
Driving (all other scenarios)[3]	Weeks 3 to 4
Golf – putting/chipping	Weeks 3 to 4
Yoga/Pilates	Weeks 4 to 6
Cycling	Weeks 4 to 6
Gardening[4]	Weeks 4 to 6
Kneeling (if possible)	Week 6 onwards
Bowling	Week 8 onwards
Country walks	Weeks 8 to 12
Golf – full swing[5]	Weeks 8 to 12
Running	Weeks 12 onwards

1. If you have a desk-job, you may be able to return to work within the first week, whereas if you have a manual intensive job, it may take as long as 6 weeks before you can return to work.
2. Please only attempt swimming when your wound is dry/healed. You should also feel confident enough with walking around wet surfaces and be careful when getting into and out of the pool.
3. Mr Kosuge recommends the following:

    a. You should not be taking any pain medication that can affect your concentration
    b. Speak to your insurance company and inform them you have had a knee arthroscopy.
    c. You should have a practice run in an isolated area.
    d. You should be able to perform an emergency stop

4. Avoid shovelling with your operated leg to minimise impact on your knee. Avoid attempts at kneeling until after week 6.
5. Mr Kosuge recommends that you begin by using a golf buggy and progress to walking based on how your knee feels. Consider using a ball retriever to eliminate the need for deep squatting.

Pain relief
It is easier to manage your pain with regular pain relief, rather than treat an acute painful episode. Therefore, you should take your painkillers as prescribed and pre-emptively. For example, if you plan to go for a walk, take painkillers 30 minutes before doing so.

In addition to painkillers, Mr Kosuge also recommends:

- Use a cold pack to ice the operated area 20 minutes at a time, four times daily. Remember to wrap the cold pack with a thin towel to avoid direct contact between the cold pack and your skin/wound dressing.
- Increase your activity levels based on your pain levels. Listen to your body.

Although discomfort/pain after surgery is a normal part of the healing process over the first few weeks, severe pain is not. If you are in severe pain despite taking your prescribed painkillers regularly, this may be a warning that something is not quite right. Please contact Mr Kosuge or a member of his team should this happen.

Wound Dressing
Knee arthroscopy is performed using two (occasionally three or more) scars between half a centimetre to one centimetre long. Mr Kosuge uses stiches at the end of surgery to hold the skin together. Your surgical wound will be covered with a sterile dressing and over this, you will have a bulky bandage dressing wrapped around your knee. The bulky bandage can be unravelled by yourself 48 hours after surgery.

The sterile dressings stuck over your scars should be left undisturbed for 2 weeks, Please do not take the dressing off and please avoid getting the dressing wet during this period. This is to minimise the risk of wound contamination by bacteria. You may wish to purchase a water-proof protector dressing to cover the knee so that you can shower.

You will have a wound review 2 weeks after surgery — this will either be done at your GP practice or at a nurse-led wound clinic. You will have your stitches removed at this stage.

If you have a concern about your wound dressing (e.g. excessive staining from beneath), please get in touch with Mr Kosuge or a member of his team rather than your GP.

Once your wound is completely healed (weeks 2 to 3), Mr Kosuge recommends you apply and massage a fragrance-free skin cream or oil (e.g. E45; Bio-Oil) on a daily basis. This will help soften and flatten your scar over time.

Swelling
It is not unusual for your knee to remain swollen after the operation. This can take up to 4 weeks to improve.

To help with swelling:

- Elevate your leg whenever you are sat down or lying down.
- Continue with any anti-inflammatory medications you have been prescribed.
- Continue to mobilise and exercise as much as you can.

If you develop swelling in your leg (not knee) that is severe, does not fluctuate, and is associated with excessive pain or even redness, please get in touch with Mr Kosuge or a member of his team. This may indicate a blood clot in the deep vein of your leg (DVT) and will need investigating expediently.

Bruising
You may develop bruising around your knee a few days after your surgery. This is common and the bruising may extend to involve your leg at times. Bruising will be more extensive if you are on stronger blood thinners.

Your knee will also feel warm to touch and is part of the normal process of healing. This can take 4 weeks to settle.

Stockings
In the majority of cases, Mr Kosuge recommends that you wear the compression stockings for a total of 6 weeks after surgery. This reduces the risks of a blood clot in the deep veins of your leg (DVT). As a result of swelling, your stockings can become too tight and mark your leg. Should this happen, please remove your stockings and elevate your leg. Once the swelling improves, you can re-apply your stockings.

In addition:

- Perform exercises to help your circulation regularly (see 'Rehabilitation').
- Walk a little, and often.

Sleeping
You do not need to sleep in any particular position after surgery. However, please refrain from putting a pillow beneath your knee — this can lead to tightening of your muscles and tissues in the back of your knee, which in turn will lead to difficulties straightening your knee fully.

It is not uncommon for pain to be worse at night than during the day for the first week after surgery. This is because your muscles and tissues get stiff as you rest towards the end of the day. You may wish to pre-emptively take painkillers before you sleep.

Bowels
The combination of opiate pain medications, changes in diet, and reduced activity can lead to constipation.

- Eat a high fibre diet — include foods such as wholegrain and high fibre cereals, wholemeal bread, fruit, vegetables, nuts and seeds.
- Drink plenty of water.

Constipation can be serious and lead to bowel obstruction. Please inform your GP (or attend your local Emergency Department) if your constipation troubles you significantly, or if you develop abdominal pain.

Nutrition
After surgery, calorie and protein requirements are greater than normal. Protein is the building block for healing — try to include 1 or 2 sources at each meal:

- Beef, poultry, fish.
- Soya, beans, nuts, seeds.
- Eggs, milk, yoghurt, cheese.

Blood loss reduces your iron levels. Iron is crucial in carrying oxygen throughout your body so reduced iron levels may lead to you feeling tired, light-headed and dizzy. Iron-rich foods include:

- Liver.
- Red meat (beef, lamb, pork).
- Beans (kidney beans, chickpeas, edamame soya beans).
- Dried fruits (figs, apricots).
- Nuts and seeds (almonds, Brazil nuts, hazelnuts, sunflower seeds).

Vitamin C increases absorption of iron from your bowels. Foods rich in vitamin C include:

- Citrus fruits (oranges, lime, lemon)
- Strawberries
- Blackcurrants
- Vegetables (peppers, Brussel sprouts, broccoli, potatoes)

Mr Kosuge recommends you include the above in the meals/snacks that you have in the period leading up to your surgery as well as in the months after surgery.

For further information about nutrition, Mr Kosuge recommends:
Preparing for Surgery — Nutrition

Smoking
Smoking has many detrimental effects on your body and it can affect your recovery after surgery:

- Reduces oxygen delivery to your tissues.
- Reduces your body's ability to fight off infections.

Wounds can heal slower and the risk of infection is greater if you smoke. Mr Kosuge recommends that you stop smoking at least 2 weeks before surgery, and to recommence at least 4 weeks after surgery (this is if you wish to start again). This will help with your healing and recovery from surgery.

You may wish to use this opportunity to stop smoking as all hospitals are designated smoke-free.

For further information and help with smoking cessation, Mr Kosuge recommends:
Preparing for Surgery — Smoking

Travel
The concern about travelling is related to the length of time spent immobile during travel. This includes prolonged travel times via trains, buses and/or cars. There is no consensus on when it is safe to fly after knee arthroscopy. Mr Kosuge advises that you avoid short-haul flights (less than 4 hours) until you are walking comfortably, and that you avoid long-haul flights (more than 4 hours) for 6 weeks after surgery. When you do fly, consider the following:

- Drink plenty of water to remain hydrated.
- Consider use of compression stockings.
- Perform exercises to help your circulation (see 'Rehabilitation').
- Take frequent walks when permitted to do so.

Out-patient appointments
Mr Kosuge will make arrangements to see you in the out-patient clinic, at 8 weeks after surgery.

If your appointment is not given on discharge from hospital, you should receive it in two weeks. If for any reason, you do not receive the appointment through the post, please contact us.

Summary and Troubleshooting

Event Timeline	
Months before Surgery	• Well-balanced diet • Ensure medical conditions under control (e.g. diabetes, blood pressure) • Start pre-operative exercises
Weeks before Surgery	• Pre-operative assessment clinic appointment (PAC)
2 weeks before Surgery	• Stop smoking
1 to 2 weeks before Surgery	• May need to stop certain medications based on instructions provided at pre-operative assessment clinic (PAC) • Complete online questionnaires
Day before Surgery	• Follow instructions on when to stop eating and drinking
Day of Surgery (Day 0)	• Shower before attendance at hospital • Arrive at ward and time stated in admission letter • Review by Mr Kosuge (or member of his team) • Review by anaesthetist • Check-in by ward nursing team
Day 0	• Discharge from Hospital after surgery
Home	• Gradual increase in walking distance • Regular exercises • Well-balanced diet
Day 14	• Wound review • Removal of stitches/staples • Complete online questionnaires
Weeks 2 to 12	• Out-patient physiotherapy (depending on procedure but in the majority of cases, this is not required)
Week 5	• Stop wearing compression stockings
Week 8	• Out-patient review by Mr Kosuge (or member of his team)
At various intervals after surgery	• Complete online questionnaires

Troubleshooting		
Problem	**Signs**	**What to do**
Wound infection	• Excessive stain on wound dressing • Weeping from wound • Red, hot, angry looking wound/knee • Foul-smelling wound • Pain • Feverish	Contact Mr Kosuge (or a member of his team) to arrange a review
Severe stiffness	• Unable to bend or straighten knee • Lack of progress with exercises	Contact Mr Kosuge (or a member of his team) to arrange a review
DVT	• Painful swelling of leg • Swelling that does not fluctuate — i.e. does not reduce overnight and increase during the day	Contact Mr Kosuge (or a member of his team) to arrange a review OR Attend local Emergency Department
PE	• Chest pain • Localised chest pain with coughing or taking deep breath • Shortness of breath	Call 999 — urgent attendance at local Emergency Department

Disclaimer

Mr Kosuge has tried very hard to keep the information in this leaflet accurate and up-to-date, but he cannot guarantee this. Mr Kosuge does not expect this general information to cover all the questions you might have or to deal with everything that might be important to you. You should discuss your choices and any worries you have with Mr Kosuge, using this leaflet as a guide. This leaflet on its own should not be treated as advice.

For full details, please visit: www.denniskosuge.co.uk/disclaimer

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