



The
HIP AND KNEE
– SURGEONS –

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PATIENT INFORMATION

HIP ARTHROSCOPY

HIP ARTHROSCOPY : PATIENT INFORMATION

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In the past, patients suffering from hip problems had limited options. In most cases, they were forced to live with the pain until a total hip replacement was required. With the advent of arthroscopic hip surgery, however, there are now less invasive treatment options available that can provide relief or significant improvement for a number of conditions.

Most people who suffer pain or experience decreased mobility due to hip impingement, labral tears, cartilage injuries, loose bodies in the joint, or other conditions may benefit from a minimally invasive surgical procedure.

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Hip arthroscopy (key hole surgery of the hip) is used to assist the diagnosis and treatment of a variety of disorders of the **adult hip**:

- Labral tears
- Removal of loose bodies
- Osteochondral injuries
- Synovial disease
- Ligamentum teres tears
- Treatment of septic arthritis
- Surgery for femoro-acetabular impingement
- Evaluation of undiagnosed hip pain



Diagram of a labral tear

Hip arthroscopy also has diagnostic and therapeutic applications for hip disorders in children and adolescents.

Like arthroscopy of other joints, hip arthroscopy benefits from **minimal invasiveness** and **shorter recovery periods** than with open procedures. Hip arthroscopy, however, is not widely available as it requires specialist equipment and takes a long time to learn.

Hip arthroscopy is carried out under a general anaesthetic and usually involves an overnight stay in hospital

Perhaps the two most common current indications for hip arthroscopy include the presence of symptomatic FAI or an acetabular labral tear, or both. These will be considered in more detail here:

1) *Femoroacetabular Impingement (FAI)* –

FAI is a condition affecting the hip joint (Figure 1) and is characterised by abnormal contact between the femoral head (hip ball) and the rim of the acetabulum (hip socket) leading to damage to the articular cartilage (lining or gristle) in the acetabulum, or to the labrum of the hip, or both. The labrum is a ring of cartilage that surrounds the acetabulum and looks very like the meniscus of a knee joint, although its function is different. Damage to the labrum and/or articular cartilage will likely cause pain.

An abnormality in the shape of the femoral head or acetabulum, or both, may cause FAI. Activities that involve recurrent hip motion can increase the frequency of this abnormal contact, e.g. kicking sports. FAI generally presents in three forms: cam impingement, pincer impingement and mixed impingement (involving both cam and pincer type).

FAI can affect all age groups from the early teens to throughout adult life and is being increasingly recognised as one of the predisposing factors for osteoarthritis of the hip.

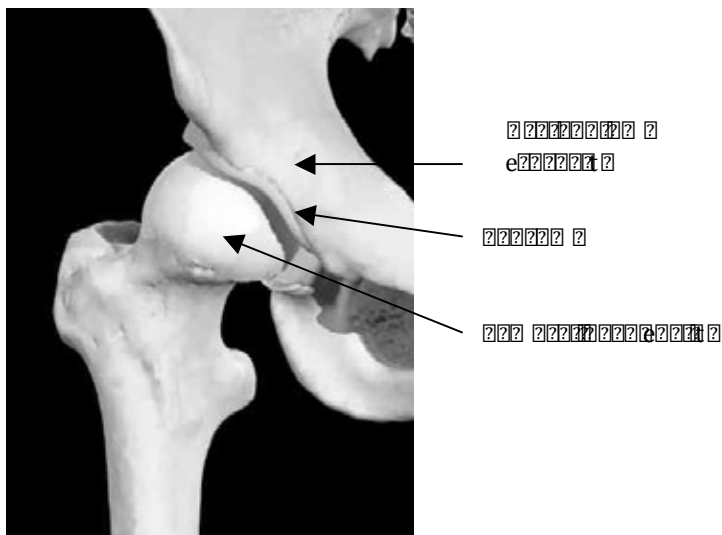
Although scientific evidence is still slightly sketchy, it is felt by many that without early intervention surgery, there is a high likelihood of developing osteoarthritis ('wear and tear'), with the subsequent requirement for either a hip replacement or other major hip operations. Hip arthroscopy can be used to reshape the femoral head and socket to prevent impingement, and aims to protect the hip from developing osteoarthritis, as well relieving current symptoms.

There is a more comprehensive explanation of FAI later in the booklet.

2) *Acetabular labral tears* –

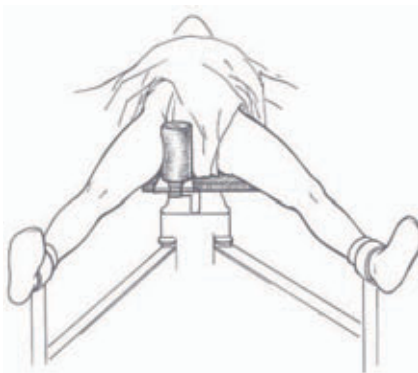
The labrum, which surrounds the acetabulum, can be partially damaged or torn. This is usually associated with FAI, but not always so. With hip arthroscopy, the labrum can be either debrided (remove the damaged tissue only) or repaired. Occasionally a labrum can also be grafted. MRI and/or CT scans, although often performed before hip arthroscopic surgery is undertaken, do not always reveal every labral tear.





Operative technique

The patient is positioned on a fracture table (special traction table) with a **well padded** perineal post pressing against the inner aspect of the proximal thigh (very close to the groin).



The legs are held apart as shown on the diagram and traction is applied to each leg via the foot plates.

The image intensifier (special X-ray) is used to confirm adequate distraction (to allow the telescope to pass into the joint) before starting the procedure.



The leg is then prepared and draped using waterproof drapes. The image intensifier is also draped and positioned from the opposite side and the distraction is reapplied and verified to allow the procedure to begin.

The bones of the hip joint (the ball and socket) are separated by approximately 1cm by applying traction to the foot while wearing a special boot. By distracting the hip, this provides enough room for a small telescope ('arthroscope') to be introduced into the joint. Initially, air and/or fluid are injected into the hip, under x-ray guidance.

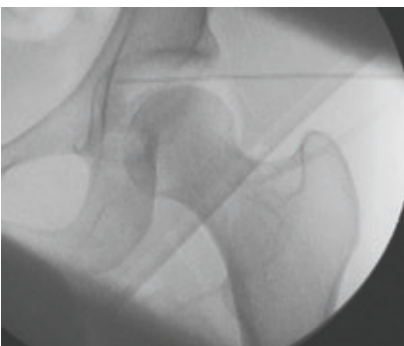
Once correct placement of the instrument has been confirmed, two, three, or sometimes four small incisions are made on the side of the hip. Each of these incisions generally measures approximately 5-10 mm in length.

Through these small holes, the telescope and instruments are passed into the joint. The surgeon will then be able to visualise the hip joint, identify the problem(s), and proceed appropriately. Very occasionally it is not possible to insert an arthroscope into the hip joint.

Typically three or four such portals are created during hip arthroscopy to allow the visualisation and treatment of the hip abnormalities or injuries. The additional portals allow the passage of specialist instruments into the hip joint to carry out the required procedures. Fluid is passed through the joint under high pressure to clear any debris.

Hip arthroscopy involves the assessment of both the **central compartment** (ball and socket joint) and the **peripheral compartment** (head-neck junction and soft tissues just outside the ball and socket joint). The traction is released (and the traction post sometimes removed) and the hip and knee are flexed to allow access to the peripheral compartment.

At the end of the procedure medications may be injected into the hip to minimise pain after the surgery. The small holes are often closed with one to two stitches each or tapes. Finally, a further dressing is placed over the holes.



Operating time

Operating time varies from patient to patient and is dependant on what needs to be done in each individual case. Typically it can take at least 30 – 40 minutes to carry out the required procedures in the central compartment and then a further hour to change the position of the leg, gain access to the peripheral compartment and then carry out the procedure in this compartment (e.g. reshape the femoral head-neck junction).

Complications

Any surgical procedure carries a risk of potential complications, regardless of how competent the surgeon is. The surgeon and patient need to work together to minimise the risk of complications. Complications can be described as being related to surgery generally (general complications) or related to hip arthroscopy specifically (specific complications).

General Complications (common to most lower limb operations):

- postoperative chest infection
- inability to pass urine after surgery
- inability to open bowels
- blood clots in leg veins, or bleeding into leg
- heart attack

Specific Complications (specifically related to hip arthroscopy):

- There is a less than 5% chance that the hip arthroscopy may make symptoms worse (particularly in the arthritic hip).
- Typically can expect discomfort for two weeks and may have intermittent symptoms for up to three months.
- Associated with traction post (pressure effects):
 - Skin – perineal splitting (in females) or pressure sores
 - Nerve damage
 - Pudendal neuropraxia (numbness between the legs)
 - Damage to other nerves can also rarely happen
 - Nerve damage is usually temporary, but rarely can be permanent
- Bleeding – very rarely
- Infection – very rarely



After hip arthroscopy:

Usually, you will feel some discomfort in your hip. In addition, the discomfort can be experienced in the lower back, buttock, knee and ankle. The discomfort can normally be reduced with the appropriate pain relief. In the majority, there will be some swelling in the groin, buttock and thigh. This is caused by the fluid used during the surgery. The swelling reduces over the following few days.

You are likely to be seen by a physiotherapist following your surgery. They will make sure you are safe to mobilise with or without the aid of crutches. This will depend on the instructions received from your surgeon. In some circumstances you may be asked to limit the amount of weight you put through your operated leg, while in others you may be allowed to fully weight-bear immediately after surgery. . Consequently, you may require crutches for a few days, or weeks depending on what specific surgery has been undertaken. Your surgeon and physiotherapist will decide when it is appropriate for you to stop using the crutches.

Observe the wound for any signs of infection (increasing pain, redness or swelling). The skin incisions can sometimes leak fluid or blood slightly for a few days; this is normal

At a variable point after surgery you will be reviewed by your surgical team. At this appointment, your wound may be inspected and, in some cases, the sutures removed if that has not already been performed. A further explanation of the surgery undertaken can then be provided and there will also be an opportunity for specific queries to be answered. Any subsequent appointments will be arranged and will be guided by the surgery performed.

Your surgeon and physiotherapist will develop an appropriate rehabilitation programme for you following the surgery. Your physiotherapist will guide your return to sporting activities (running etc.) depending on your progress. This is extremely variable between individuals, depending on the surgical findings and the length of symptoms prior to surgery.

In the majority, by 8 weeks after surgery you should be walking relatively pain-free. By this 8-week point, running can be commenced if that is your wish. Remember, however, that it may take 3 to 6 months (or more) to return to an elite level of competition/fitness. Any unexpected increase in pain can be treated with ice packs and anti-inflammatory medication. The broad strategy for rehabilitation is to regain early range of movement and stability, followed by strength and endurance. Return to work will depend on pain levels and the nature of your job.



There are some activities to avoid or take care with up to 8 weeks following surgery. These include the following : -

Prolonged standing, especially on hard surfaces.

Prolonged walking i.e.; around shopping centres.

Heavy lifting

Squatting / crouching

Sleeping on your side. Try to sleep on your back. If you must sleep on your side, sleep on the unoperated side, with a pillow under your operated leg – to hold that leg level with the body.

Clutch use in manual cars (for left hips) – may flare up symptoms in the first couple of weeks and is best avoided. Exchange cars if possible.

Sitting with the hips at 90 degrees – a more open seat angle is recommended i.e.; 120 degrees. Car seats should be tilted backwards slightly in order to open the hips out.



FURTHER READING : FEMORO-ACETABULAR IMPINGEMENT

What is femoroacetabular impingement?

Femoroacetabular Impingement (FAI) is a condition in which there is abnormal contact (impingement) between the rim of the acetabulum (hip joint socket) and femoral head-neck junction (the bone just below the ball part of the thigh bone), on movement of the hip. The most common movement that brings on pain is hip flexion (knee towards chest). Patients will experience pain, usually in the groin, but sometimes further down the front of the thigh, side or back of the hip. There may be episodes of clicking in the hip, or the sensation that it is coming out of joint. Certain activities, particularly those which involve hip flexion (e.g football, dancing, ballet, aerobics) will make the pain worse. Patients often find that sitting for a prolonged period of time e.g long car journey, will bring on groin pain, and they often struggle to move into a more comfortable position.

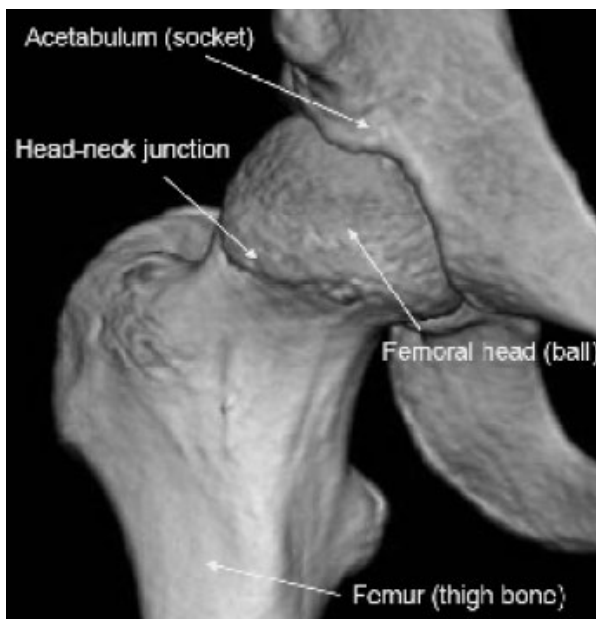


Diagram of hip joint

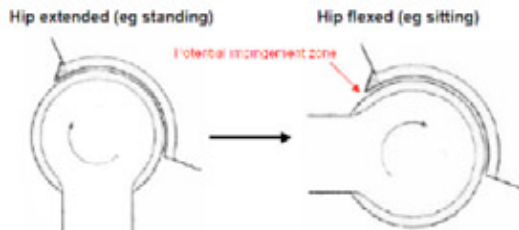
How does FAI occur?

The mechanism of FAI was only described as recently as 2005. It is important to understand that all hips will impinge in asymptomatic people, but only at the extremes of movement. The difference between a normal hip and one with FAI is that the hip impinges much earlier in a patient with FAI. This occurs because of subtle differences in the anatomy of the hip joint.

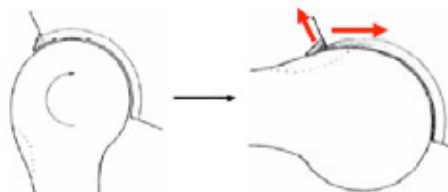


Essentially this difference is an excess of bone, either on the edge of the acetabulum, or on the femoral head-neck junction, or both. If the acetabulum is tilted backwards (retroverted), the same effect occurs. The diagrams below illustrate this mechanism.

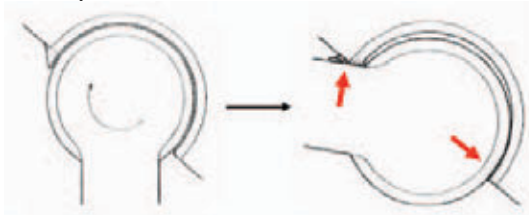
Normal hip joint, viewed from the side – no impingement at 90 degrees of hip flexion



Hip joint with impingement at 90 degrees of hip flexion, because of excess bone at the head-neck junction. This type of impingement is termed 'Cam' impingement. The red arrows indicate the shear force applied to the acetabular cartilage (right arrow) and the displacing force applied to the acetabular labrum (left arrow)



Hip joint with impingement at 90 degrees of hip flexion, because of excess bone in the anterior rim of the acetabulum. This type of impingement is termed 'Pincer' impingement. This results in direct damage to the labrum (left arrow) and the femoral head is levered posteriorly, damaging the cartilage at the back of the joint (right arrow)



Why does FAI cause hip pain?

As can be seen from the diagrams above, FAI results in damage to the cartilage (shiny shock absorbing layer) of the hip joint, and to the acetabular labrum (gristly bumper around the edge of the socket that helps to seal the joint). The labrum has lots of nerve endings so damage to it is painful. Cartilage does not contain nerves, but it is likely that the increased force applied to the bone beneath the cartilage, which does contain nerves, causes the pain.

Why is FAI important?

FAI is important for two reasons.

First, it is a common cause of groin pain in young adults.

Because FAI has only recently been understood, in the past such patients may have been misdiagnosed as having other conditions such as a muscle strain (groin strain), hernia, or inflammatory joint disease.

The second reason is that many surgeons believe that if untreated, FAI may result in hip arthritis, which may ultimately require a hip replacement. It is important to understand however, that there are not currently any studies that show that this is definitely the case, and that there are no studies yet that show that treatment of FAI prevents progressive wearing out of the joint and arthritis.

What causes FAI?

Some patients have a previous history of hip problems (such as injury, childhood hip conditions) and develop FAI as a secondary consequence. For the vast majority of patients however, there is no obvious reason why FAI occurs. The primary problem is the subtle deformity in the joint shape, but this may or may not cause problems depending on the activity level of the patient and how easily their cartilage and labrum are damaged. Recent research from Oxford has shown a strong genetic predisposition to the condition.

How is FAI investigated?

Initial consultation with your surgeon will focus on establishing if the pain is likely to be coming from the hip joint, and to exclude other sources and identify any predisposing factors. You will then be examined and a number of provocative manoeuvres will be performed (such as the impingement test shown below), to demonstrate the impingement.





Impingement test

Following the clinical assessment, xrays of the hip will be taken to look for signs of arthritis, any other cause of hip pain, and the subtle bony deformities that are associated with FAI. It is likely that an MRI scan of your hip will also be done, usually with dye injected into the joint (MR Arthrogram), to look in detail to see if the labrum is torn or if there is any sign of damage to the cartilage. It may be that the radiologist also injects local anaesthetic into the hip with the dye, to help determine if your pain is coming from within the joint.

How is FAI treated?

Some patients may find that modification of activity, with or without simple analgesics, is adequate to limit their symptoms to a satisfactory degree. Patients who wish to continue their activities may be advised to consider surgery. There are two main principles in the surgical management of FAI:

- 1) Deal with the damage caused to the acetabular cartilage and labrum
- 2) Address the underlying bony deformity that caused the impingement in the first place

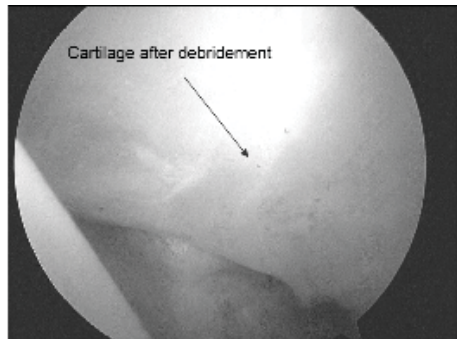
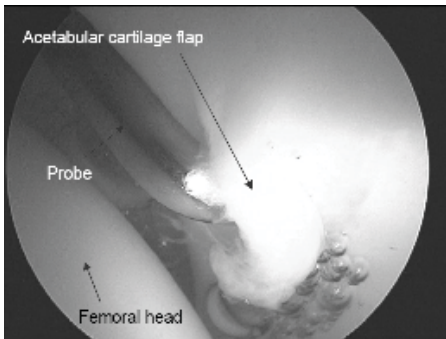
Surgery may be performed via an open procedure, or via a keyhole (arthroscopic) technique. FAI is now the most common indication for a hip arthroscopy. There isn't any evidence as yet as to whether open or arthroscopic surgery is best. Our preferred approach is arthroscopic, because we believe that the rehabilitation is quicker and there is less scarring that may compromise further procedures in the future.

Dealing with the damaged acetabular cartilage and labrum

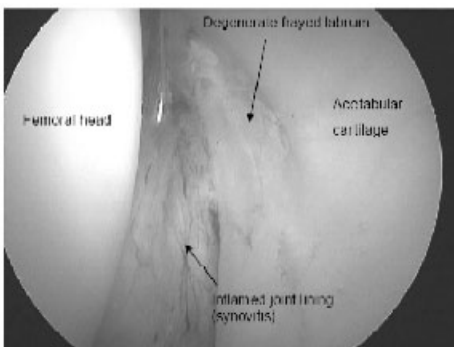
Usually, simple debridement (removal) of the damaged tissue is all that is necessary to improve mechanical symptoms. Unfortunately this tissue is not capable of healing itself. It is important to ensure that all unstable areas of cartilage are removed to



prevent further damage. Occasionally, it is necessary to repair the labrum if it is detached. This is done using suture anchors into the bone of the acetabulum. If the cartilage has been worn away by the impingement, microfracture of the exposed bone (whereby the surface is scratched using a small pick) may encourage new cartilage to form, but the long-term results of this procedure are not known.



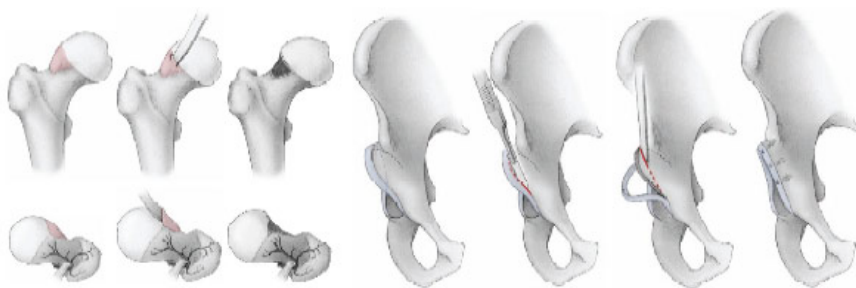
Probe showing an unstable flap of acetabular cartilage, before (left) and after (right) debridement



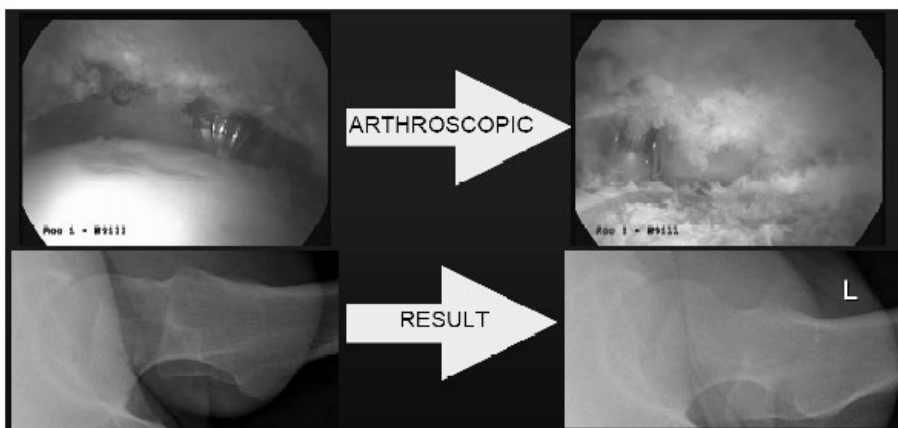
Degenerate labrum, before (left) and after (right) debridement

Addressing the underlying bony deformity

Excess bone on the rim of the acetabulum and femoral head may be removed using a burr, visualising the resection directly using the camera. The aim is to remove enough bone so that there is no longer any impingement within a normal range of movement. Adequate bony resection is confirmed with the camera and xray equipment, and a dynamic impingement test performed (see below).



Schematic diagrams to illustrate the removal of bone from the femoral head-neck junction (left), and acetabular rim (right).



Arthroscopic view of excess bone at femoral head-neck junction, before and after removal with a burr. The xrays below show the resection of bone, termed a 'femoral osteochondroplasty'

Dynamic impingement test.

This can be performed at the end of the arthroscopic procedure to ensure that an adequate bony resection has been performed. This test reproduces the impingement position (as described above) and thereby confirms that there is no residual impingement.

What is the post-operative rehabilitation?

This will depend according to the surgical procedure performed. Some patients are able to go home the same day or day after surgery. Patients who have a femoral osteochondroplasty will usually be asked to touch-weightbear for one to two weeks after surgery, and for up to 6 weeks if acetabular microfracture is performed. If a labral repair, or extensive debridement is performed, then flexion will be limited for up



to six weeks. Your rehabilitation will be carefully supervised by your physiotherapist. It is important to keep the joint mobile to prevent post-operative scar formation. Hydrotherapy is commonly employed from the third post-operative week.

Does treatment of FAI improve symptoms?

The published evidence indicates that surgical treatment of FAI improves symptoms in the short term.

There is no evidence to indicate the best methods of treatment as yet.

The success of surgery will largely be determined by the degree of pre-existing damage to the cartilage and labrum. Patients with focal areas of full-thickness cartilage loss will likely develop progressive arthritis in spite of surgery, although may gain improvement in their range of motion in the short-term. There is no evidence as to whether treatment of FAI slows or prevents the progression of arthritis currently.

What are the complications of arthroscopic surgery for FAI?

The complications are the same as for a normal hip arthroscopy. In addition, femoral osteochondroplasty may theoretically weaken the bone leading to a risk of fracture, however in practice this is extremely rare. The main risk is that the procedure does not improve the patient's symptoms significantly, or that they deteriorate after initial benefit.





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