Introduction
Hip arthroscopy is a surgical procedure that gives doctors a clear view of the inside of the hip joint. This helps them diagnose and treat joint problems. The surgeon will make small cuts around your hip and look inside using a tiny camera. Other medical instruments may also be used inside to fix your hip. Patients with Osteoarthritis and hip pain who do not respond to conservative treatment and have no evident cause on standard radiographs, might be candidates for a hip arthroscopy. Arthroscopy has also been used to diagnose and evaluate other diseases affecting the hip, such as Femoroacetabular Impingement, Rheumatoid Arthritis, Juvenile Rheumatoid Arthritis, Perthes Disease, Synovial Chondromatosis, and Ankylosing Spondylitis of the hip.

Procedure:
Hip arthroscopy is performed through small incisions (about 0.5 to 1cm in length each) using a camera to visualize the inside of the hip joint.

The tiny camera splits the muscle fibers. When the camera is removed, the muscle fibers return to their normal position and alignment.

Surgeons will be able to see the joint through the camera, identify the problem(s), and
  - Repair torn cartilage
  - Remove loose pieces of cartilage, bone or ligaments
  - Reshape the bones

The operation typically takes 60-90 minutes.

**Benefits:**

- Arthroscopy can potentially delay the need for Total Hip Replacement surgery in the future.
- Minimally invasive procedure: You will have very small incisions (0.5-1cm in length each, two to four in total) around the hip.
- Outpatient procedure: You usually go home the same day that you have surgery.
- Short rehabilitation period: On the first day after surgery, you will begin the rehabilitation process. This includes getting out of bed and walking. You may be able to bear some weight on the treated leg right away.
You will have greater chance of going back to play competitive sports and a high functional level compared to total hip replacement surgery.

Early return to sport: Most patients find they are back to full activities 3-4 months following hip arthroscopy.

Recovery:

Management:

- You may have some pain and discomfort following your surgery. You will be given a prescription for pain medication which can be taken as needed.
- You will need to leave the patches on your wound and keep it dry for 24 hours.

Rehabilitation:

- You can have protected weight bearing (weight bearing as tolerated with crutches) immediately following surgery.
- You will need to begin physiotherapy as early as 48 hours after surgery with the guidance of your physiotherapist.
- The rehabilitation will involve exercises to improve range of motion of the hip as well as strengthening exercises.
- Your physiotherapist will help you decide when and how to progress your exercises in the long run.
- It is very important that you will use crutches for the first two weeks after surgery to help protect the repair and improve gait mechanics following surgery.
- You may require assistance with driving for up to 6 weeks.
- Exercises like stationary bike are a part of the rehab and may begin as soon as 48 hours after surgery.
- Sedentary work can be partially resumed in one to two weeks. Labor-intensive work may require 3 months.
- You can resume full physical activity in 3 to 6 months depending on your goals.

Possible Risks and complications:

Hip arthroscopy appears to be safe. The overall complication rate with hip arthroscopy was 4 in 100 (4.0%) with the vast majority of complications being non-life or limb threatening in nature. Here are rare complications that can occur:
- Neurologic traction injury: About 3 in 1000 (0.3%) of you will experience it.
  - This is the least severe form of nerve injury. The actual structure of the nerve remains intact, but there is a transient interruption in the sensations being conducted through the injured nerve fiber. You could have decreased feeling or loss of strength in the skin on the lateral part of your leg and genital area, but there is usually a complete recovery.

- Intra-abdominal Fluid Extravasations: About 15 in 10,000 (0.15%) of you will experience it.
  - During the procedure, when fluid is removed from the hip joint by the arthroscopy, some fluid may leak into the abdomen. You could experience the sense of increased abdominal pressure and discomfort that involves a measurable change in the circumference of your abdomen sometimes with swollen legs.

- Dislocation of the hip: About 3 in 10,000 (0.03%) of you will experience it.
  - You could experience sharp, pain that become worse if the joint has moved. These symptoms will last until the damaged tissue has been allowed to rest and heal completely, and will require use of painkillers. Your orthopedic surgeon will have to pull on the leg to reposition the hip within the socket under anesthesia.

- Blood clots in the legs or pelvis: About 6 in 10,000 (0.06%) of you will experience it during the first 6 months.
  - The blood clot, due to immobilization, causes pain and swelling in the affected leg that typically gets better in about a month. About 17% to 50% of you will have persisting leg swelling, pain, vein swelling, and skin induration, for a longer period, up to 2 years.
Arthroscopy for Hip Osteoarthritis

Introduction

Hip arthroscopy is a surgical procedure that gives doctors a clear view of the inside of the hip joint. This helps them diagnose and treat joint problems. The surgeon will make small cuts around your hip and look inside using a tiny camera. Other medical instruments may also be used inside to fix your hip. Patients with Osteoarthritis and hip pain who do not respond to conservative treatment and have no evident cause on standard radiographs, might be candidates for a hip arthroscopy. Arthroscopy has also been used to diagnose and evaluate other diseases affecting the hip, such as Femoroacetabular Impingement, Rheumatoid Arthritis, Juvenile Rheumatoid Arthritis, Perthes Disease, Synovial Chondromatosis, and Ankylosing Spondylitis of the hip.
Procedure:

- The hip joint is made up of two major parts. The hip joint is a ball and socket joint that not only allows flexion and extension, but also rotation of the thigh and leg.
  - The hip socket, which is cup-shaped, sits in the pelvis.
  - The ball is the upper end of the thighbone (called the femoral head).

- If you would like to sleep during the surgery, the anesthetist will put you to sleep, so you will not be awake and therefore will have no memory of the procedure.

- Anesthesia:
  - There are two anesthesia options for this procedure, you can either have a general or a regional (spinal) anesthetic. Both options are safe and your pain will be managed with both.
    - General anesthesia: you will be 'asleep' (unconscious) for the procedure and not have any memory of the surgery.
    - Regional anesthesia: local anesthesia will be put in your lower back to make your body numb so you won't feel the procedure. Although you will still be awake and aware of the procedure the anesthesiologist can give you sedation medication to make you quite sleepy so you aren't anxious and mostly unaware of the procedure.

- After you receive anesthesia, your surgeon will put your leg in traction.
This means that your hip will be pulled away from the socket enough for your surgeon to insert instruments, see the entire joint, and perform the treatments needed.

The bones of the hip joint (the ball and socket) are separated by approximately 1 cm by applying traction to the foot while wearing a special boot.

- Initially, air and/or fluid are injected into the hip, under x-ray guidance. Once correct placement of the instrument has been confirmed typically small incisions are made around the hip.
- Each of these incisions generally are approximately 0.5 to 1 cm in length.
- Through these small holes, the tiny camera (‘arthroscope’) and instruments are passed into the joint under x-ray guidance.
- The tiny camera will split the muscle fibers. When the camera is removed, the muscle fibers return to their normal position and alignment.
- Surgeons will be able to see the joint through the camera and identify the problems. Depending on the problem encountered, your surgeon will perform the appropriate procedures such as:
  - Repair torn cartilage
  - Remove loose pieces cartilage, bone or ligaments
  - Reshape the bones
- The operation typically takes 60-90 minutes but duration will vary depending on the problem in the hip joint but can last up to 120 minutes.
- After surgery, you will stay in the recovery room for 1 to 2 hours, then stay in the surgery area before being discharged to go home.

**Benefits:**

- Arthroscopy can potentially delay the need for Total Hip Replacement surgery in the future.
- Main possible benefits of arthroscopy compared to total hip replacement:
  - Relief of symptoms, including reduced pain.
  - Functional improvement, meaning increased mobility and regained ability to perform activities of daily living, the extent of which depend on the severity of your OA and other pre-existing conditions before the surgery.
o It helps to diagnose and treat early causes of arthritis, possibly preventing progression.

o Hip arthroscopy is a minimal invasive surgery compared to the open surgical alternatives. You will have very small incisions (about 0.5-1 cm each in length, two to four in total) around the hip, leading to minimal scarring.

o Outpatient procedure: You usually go home the same day or the next day that you have surgery.

o You will have chance of going back to activity at a high functional level. For example, playing competitive sports such as soccer or hockey.

➤ Less restriction on physical activities than after a hip replacement: On the day after surgery, you will begin the rehabilitation process. This includes getting out of bed and walking.

➤ You can bear some weight on the treated leg the day after surgery.

 o You will be able to ride the stationary bike 48 hours after your surgery.

➤ Early return to physical exercise: Most likely you will go back to full activities 3 to 6 months following hip arthroscopy.

 o **One to two weeks after the surgery after your wound has healed, you can walk in the pool.**

 o **Approximately six to eight weeks after the surgery, you maybe able to increase activities including light aerobic exercise.**

 o **Approximately 3-6 months after surgery, you will be able to do unrestricted exercise and recreational sports after discussion with your surgeon.**

 o **These sports may include soccer, football, tennis, etc.**

**Recovery:**

➤ Management:

 o After hip arthroscopy your wound is covered with patches.

 o You will need to leave the patches in place and to keep your wounds dry for 24 hours.

 o You will be given a prescription for pain medication following your surgery which you will take as needed.
You will be given oral or intravenous antibiotics to prevent infection and you may also be given a medication to prevent blood clots in the legs.

Rehabilitation:

- You are able to have protected weight bearing (weight bearing as tolerated with crutches) immediately following surgery.
- You will need to begin physiotherapy as early as 48 hours after surgery.
- Exercises like stationary bike are a part of the rehab and may begin as soon as 48 hours after surgery.
- Your physiotherapist will guide you through the rehabilitation program, which will involve exercises to improve range of motion of the hip as well as strengthening exercises.
- Your physiotherapist will help you decide when and how to progress your exercises in the long run.
- It is very important that you use crutches for the first two weeks after surgery to help protect the repair and improve gait mechanics following surgery. The rehabilitation progress, as well as the extent of the tear and/or associated problems, will determine the weaning process.
- Your joint can be quite sore at first, and it may need some time to settle. Therefore, you are not allowed to do movements/activities that may provoke the pain such as lifting, twisting, overstretching, and jarring.
- You may require assistance with driving for up to 6 weeks.
- In most occupations, such as sedentary job, you will be able to return to work in one to two weeks. However, since the return at this point will not be completely normal you may need some breaks in between. You may not be able to work the whole day, but you can be productive.
- If your job requires significant manual labor and lifting, the return may not occur completely until at least three months following surgery. A discussion with your surgeon may be needed too.
- Full physical activity will resume up to 3 to 6 months depending on your goals.

Risks and complications:
Hip arthroscopy appears to be safe. Although about 4 in 100 (4%) of you may present some kind of complication, most of the complications are not life or limb threatening.

- **Neurologic traction injury**: About 3 in 1000 (0.3%) of you will experience neurologic traction injury
  - *This is the least severe form of nerve injury. The actual structure of the nerve remains intact, but there is a transient interruption in the sensations being conducted through the injured nerve fiber. You could have decreased feeling or loss of strength in the skin on the lateral part of your leg and genital area, but there is usually a complete recovery.*
  - *Most commonly, numbness will go away within a week or so. In some cases, smaller areas may continue to be numb for several weeks.*

- **Intra-abdominal fluid collections**: About 15 in 10,000 (0.15%) of you will experience fluid collections
  - *During the procedure, when fluid is removed from the hip joint by the arthroscopy, some fluid may leak into the abdomen. You could experience the sense of increased abdominal pressure and discomfort that involves a measurable change in the circumference of your abdomen sometimes with swollen legs.*

- **Dislocation of the hip**: About 3 in 10,000 (0.03%) of you will experience dislocation during the first 6 months
  - *You could experience sharp, pain that become worse if the joint has moved. These symptoms will last until the damaged tissue has been allowed to rest and heal completely, and will require use of painkillers. Your orthopedic surgeon will have to pull on the leg to reposition the hip within the socket under anesthesia.*

- **Blood clots in the legs or pelvis**: About 6 in 10,000 (0.06%) of you will experience blood clot during the first 6 months.
  - *The blood clot, due to immobilization, causes pain and swelling in the affected leg that typically gets better in about a month. About 17-50% of you will have persisting leg swelling, pain, vein swelling, and skin induration, for a longer period, up to 2 years.*
Total Hip Replacement for Hip Osteoarthritis

Introduction

Hip replacement is a surgery that aims to relieve arthritis pain, stabilize and improve the function of your hip. The most common cause for the pain is osteoarthritis (OA). Cartilage, which is the rubbery tissue that cushions your bones and joints, can break down and wear away. As a result, the bones rub together, causing pain, swelling, and stiffness. The surgeon will remove the old hip joint and put in a new joint. If other treatments such as physical therapy, pain medicines, and exercise have not helped, then hip replacement surgery might be an option for you.

Procedure:

- The anesthetist will put you to sleep if you request it, and you will not feel any pain during surgery.
- After you receive anesthesia, your surgeon will open up your hip joint and does the following:
  - Removes the damaged ball from the thighbone and cleans out the socket.
  - Replaces the natural joint with an artificial ball and socket.
- The surgery usually takes 1 to 3 hours.

Benefits:

- Main benefit:
Relief of symptoms, including reduced pain, increased mobility and/or regained ability to perform activities of daily living.

The above improvements depend on the severity of your OA and other preexistent diseases.

Post-operative mobility:
- Most of you will have an increased range of movement 3 months after surgery. About 51 in 100 (51%) of you will not need an aid to walk and will be able to move your hip more than 160 degrees.
- About 77 in 100 (77%) of you will be able to walk without support, 21 in 100 (21%) will use a cane, and 2 in 100 (2%) will use crutches (Data from patients average age of 80; range, 56-98 years old) after 1 to 2 years.

Pain relief:
- About 87 to 91 in 100 (87%-91%) of you will have great or complete pain relief, and 9 to 13 in 100 (9%-13%) of you will experience an unfavorable long-term joint pain after the procedure from 3 months to 5 years (Data from patients average age of 69 years old).

Sleep:
- Your sleeping quality will improve significantly 10 weeks after surgery.

Determinants regarding home management, mobility, and work will considerably improve after 3 months.

Recovery:

Management:
- You may have great deal of pain requiring painkillers within the first days.
- You may have some pain for up to 2-3 weeks and the pain may persist for 3 months.

Rehabilitation:
- You will have severe mobility restrictions and the types of restriction will depend on the specific procedure of your surgery. You will need a walker for the first days to weeks; then a cane or crutches for weeks up to 3-6 months.
- You will not be able to bend your hip over 90 degrees for 3 months.
- Physical therapy is an important part of the recovery process. You will work with a physical therapist to develop an exercise and rehabilitation program while your stay in the hospital.
o The rehabilitation program generally includes exercises to stretch and strengthen the muscles surrounding the hip joint, as well as training in activities of daily living.

o Most of you will be able to resume your activities of daily living within 3 to 6 months.

**Long-term outlook:**

- 90 out of 100(90%) of your hip replacements will last longer than 10 years.
- 85 out of 100(85%) of your hip replacements will last longer than 20 years.
- Over the course of 15 to 20 years, the artificial hip joint will loosen and you may need a second replacement.

**Possible Risks and complications:**

- In 6 months post operation, about 30 in 100 (30%) of you will have at least one complication.
- While some complications can be a bit more serious, most can be treated successfully.
- Urine retention: About 20 to 35 in 100 of you (20-35%) will experience it.
- Infections: About 1 in 100 of you (1%) will develop a wound or deep infection after the operation.
- Death: 3 out of 1000(0.3%) will die.
- Blood clots in the legs or pelvis: About 5 in 1000 (0.5%) of you may experience it before hospital discharge.
  o The blockage causes pain and swelling in the affected leg that typically gets better in about a month.
- Blood clots in the lungs: About 9 in 1000(0.9%) during the first 6 months.
  o This leads to shortness of breath, sometimes severe, which with anticoagulant treatment resolves in about 2 weeks. Anticoagulant treatment will be used for 3 months.
- Dislocation of the hip: About 4 in 100(4%) at the first 6 months.
  o You could experience sharp, pain that become worse if the joint has moved. Your orthopedic surgeon will pull on the leg to reposition the hip within the socket under anesthesia.
- Nerve damage: About 1 to 3 in 100 (1%-3%).
- If there is nerve damage, you will have decreased feeling or loss of strength in the leg, foot or ankle area.

- Different leg lengths: Less than 1 in 100(1%) of you will need another operation because one leg is longer than the other.
Total Hip Replacement for Hip Osteoarthritis

Introduction

Hip replacement is a surgery, also called Total Hip Arthroplasty, which aims to relieve arthritis pain, improve function, and make your hip more stable. The most common cause for the pain is osteoarthritis (OA), and the reason for OA is unknown. Cartilage, which is the rubbery tissue that cushions your bones and joints, can break down and wear away. As a result, the bones rub together, causing pain, swelling, and stiffness. During the operation, the surgeon will remove the old hip joint and put in a new joint. If other treatments such as physical therapy, pain medicines, and exercise have not helped, then hip replacement surgery might be an option for you.

Procedure

- The hip joint is made up of two major parts. One or both parts may be replaced during surgery.
  - The hip **socket**, which is cup-shaped, and sits in the pelvis.
  - The **ball**, which is the upper end of the thighbone (called the femoral head).
- The new hip that replaces the old one is made up of these parts:
  - A socket, which is usually made of strong metal.
  - A liner, which fits inside the socket and usually, is made of either plastic, ceramic, or metal.
  - A metal or ceramic ball that will replace the top of your thighbone.
  - A metal stem that is attached to the thighbone to make the joint more stable.
- If you would like to sleep during the surgery, the anesthetist will put you in sleep, and you will not feel any pain during surgery.
- Anesthesia:
  - You will not feel any pain during surgery due to one of two types of anesthesia that you will receive
    - General anesthesia: you will be 'asleep' (unconscious) for the procedure and not have any memory of the surgery.
Regional anesthesia: local anesthesia will be put in your lower back to make your body numb so you won't feel the procedure. Although you will still be awake and aware of the procedure the anesthesiologist can give you sedation medication to make you quite sleepy so you aren't anxious and mostly unaware of the procedure.

- After you receive anesthesia, your surgeon will make a surgical cut to open up your hip joint. Then you surgeon will:
  - Cut and remove the head of the thighbone.
  - Clean out your hip socket and remove the rest of the cartilage and damaged bone.
  - Put the new hip socket in place, then insert the metal stem into your thighbone.
  - Place the correct-sized ball for the new joint.
  - Secure all parts with cement.
  - Repair the muscles and tendons around the new joint.
  - Close the surgical cut.

- The surgery usually takes 1 to 3 hours.

**Benefits**

- Main benefit:
  - Relief of symptoms, including reduced pain, increased mobility and regained ability to perform activities of daily living.
  - Function improvement and pain relief are depending on the severity of your OA and other preexisting diseases.

- Mobility postoperatively:
  - Most of you will have an increased range of movement 3 months after surgery. About 51 in 100 (51%) of you will not need assistance to walk and will be able to move your hip more than 160 degrees.
  - About 49 in 100 (49%) of you will require assistance to walk and will be able to move your hip less than 160 degrees after 3 months.
  - About 64 in 100 (64%) of you will be able to walk longer distances compare to pre-operatively after 3 months *(Data from patients age 55-84 years old)*.
About 77 in 100 (77%) of you will be able to walk without support, 21 in 100 (21%) will use a cane, and 2 in 100 (2%) will use crutches (Data from patients average age of 80; range, 56-98 years old) after 1 to 2 years.

➤ Pain relief:
  o About 87 to 91 in 100 (87%-91%) of you will have great or complete pain relief, and 9 to 13 in 100 (9%-13%) of you will experience an unfavorable long-term joint pain after the procedure from 3 months to 5 years follow-up (Data from patients average age 69 years).
  o About 25 in 100 (25%) of you will only have occasional pain 3 months after operation.

➤ Sleep:
  o Your sleeping quality will improve significantly 10 weeks after surgery.

➤ Psychological improvements:
  o Your psychosocial quality of life will improve regarding social interaction, communication, alertness behavior, and emotional behavior immediately and 6 months after the operation.

➤ Factors such as home management, mobility, and work will considerably improve after 3 months.

Recovery:

➤ Management:
  o After surgery, you may experience a great deal of pain within the first days and you may need to take painkillers.
  o You may be given pain medication intravenously using a pump (patient-controlled-analgesia).
  o You may have some pain for up to 2-3 weeks and the pain may persist for 3 months.
  o You are likely to have problems with constipation from painkillers in the first weeks after surgery.
  o You will be given an antibiotic to prevent infection.
  o You may also be given a medication or compression boots and stockings to prevent blood clots in the legs.

➤ Rehabilitation:
  o You will have severe mobility restrictions and the types of restriction will depend on the specific procedure of your surgery.
You will need a walker for the first days to weeks; then a cane or crutches for weeks to 3-6 months.

- You will not be able to bend your hip over 90 degrees for 3 months. This means you cannot bring your knee up to your chest and you also cannot bend forward at the hip past 90 i.e. if tying your shoes.
- You may also have restricted adduction (moving your leg past midline) and any twisting (internal/external rotation) of the leg.
- Your surgeon will determine the timeline for these restrictions.
- You will also have difficulties for dressing and need for mechanical aids.
- Physical therapy is an important part of the recovery process. The length of stay in the hospital for most of you will be about 1 to 3 days, during which time you will work with a physical therapist to develop exercises and follow a rehabilitation program.
- You may need physiotherapy up to 3 months depending on your condition.
- The rehabilitation program generally includes exercises to stretch and strengthen the muscles surrounding the hip joint, as well as training in activities of daily living, such as stair climbing, and walking.
- Most of you will be able to resume your activities of daily living within 3 to 6 months.
- Your ability to perform household, domestic tasks (for example cutting toenails, having a bath, climbing stairs) will improve.
- About 84 in 100 (84%) of you will be able to maintain your own home, 6 in 100 (6%) of you will live at home with assistance, and only 10 in 100 (10%) will need someone to take care of you full-time 20 years after operation (Data from patients average age 80 years; range, 56-98 years).
- You might be able to return to recreational sports after 6 months after discussion with your surgeon.

**Long-term Outlook:**
- About 90 out of 100 (90%) of your hip replacement will last longer than 10 years.
- About 85 out of 100 (85%) of your hip replacements will last longer than 20 years.
- Over the course of 15 to 20 years, the artificial hip joint will loosen and you may need a second replacement.

**Risks and complications:**
- 6 months post operation, about 30 in 100 (30%) of you will have at least one complication.
While some complications can be a bit more serious, most can be treated successfully, such as blood clots.

- **Urine retention**: About 20 to 35 in 100 (20-35%) of you will experience it.
  - You may urinate frequently; you may feel an urgent need to urinate but have little success when you get to the toilet; or you may feel you still have to go after you've finished urinating.

- **Infections**: About 1 in 100 (1%) of you will develop an infection after the operation.
  - It may occur in the wound or deep around the artificial implants.
  - **Deep joint infection**: 2 in 1000 (0.2%) in first 90 days.
    - You will experience fever or chills due to the infection, unusually swelling of the hip joint. The replaced hip will be removed, and you will be without a hip joint and receiving antibiotics for months.

- **Risk of a complication** will be higher if you have other diseases. For instance, 40-50 in 100 (40-50%) of you who have at least three other conditions, such as heart disease, urinary tract infection, or obesity will experience a complication.

- **Death**: 3 out of 1000 (0.3%) of you who undergo hip replacement surgery will die.

- **Blood clots in the legs or pelvis**: About 5 in 1000 (0.5%) before hospital discharge.
  - The blood clot, due to immobilization, causes pain and swelling in the affected leg that typically gets better in about a month. About 17% to 50% of you will have persisting leg swelling, pain, vein swelling, and skin induration, for a longer period, up to 2 years.
  - If you are older, overweight, have cancer, or have experienced blood clots before, you will be more likely to get blood clots after surgery.
  - This clot can potentially lead to another complication, which is localized swelling in the leg due to clot and decreased flow of blood to the heart.

- **Dislocation of the hip**: About 1 in 100 (1%) of you will have dislocated the hip by first week, 3 in 100 (3%) by eighth week, and about 4 in 100 (4%) at the first 6 months.
  - You could experience sharp, pain that become worse if the joint has moved. These symptoms will last until the damaged tissue
has been allowed to rest and heal completely, and will require use of painkillers. Your orthopedic surgeon will have to pull on the leg to reposition the hip within the socket under anesthesia.

- **Nerve damage**: 1 to 3 in 100 (1%-3%) of you.
  - If there is nerve damage, you will have decreased feeling or loss of strength in the leg, foot or ankle area. Around 0.5% of you will have the nerve damage permanently.

- **Different leg lengths**: Less than 1 in 100(1%) of you will need another operation because one leg is longer than the other.
  - You might need another surgery because the difference length of your legs will cause severe post surgery problems such as walking difficulty, pain, or dislocation.