

## Hip Arthroscopy Procedures

The hip is a ball-and-socket joint. The socket is formed by the acetabulum, which is part of the large pelvis bone. The ball is the femoral head, which is the upper end of the femur (thighbone). The hip joint allows flexion and extension as well as rotation of the thigh and leg. Because the hip is responsible for transmitting the weight of the upper body to the lower extremities, the joint is subjected to substantial forces. Walking transmits 1.3 to 5.8 times body weight through the joint. Running and jumping can generate forces across the joint equal to 6 to 8 times body weight. The acetabulum is ringed by strong fibrocartilage called the labrum. The labrum forms a gasket around the socket, creating a tight seal and helping to provide stability to the joint.

The iliopsoas tendon lays across the anterior hip joint and connects the fibers of the psoas major and iliacus muscles to the proximal femur (lesser trochanter). It can become irritated when there is inflammation deeper in the hip. Athletic movements can expose the hip to high forces and ranges of motion not encountered during activities of daily living. Exposure to high forces and impingement in the hip is thought to injure the labrum. Impingement of the hip is called femoroacetabular impingement, or FAI. FAI is a condition in which extra bone grows along the bones that form the hip joint. Because the bones do not fit together perfectly, they rub against each other during movement. This friction can damage the joint, causing pain and limiting activity.

### There are three types of FAI:

- Pincer: This occurs when extra bone extends out over the normal rim of the acetabulum. The labrum can be crushed under the prominent rim of the acetabulum.
- Cam: the femoral head is not round and cannot rotate smoothly inside the acetabulum. A bump forms on the edge of the femoral head that grinds the cartilage inside the acetabulum. Figure 2 shows the boney abnormality associated with cam impingement of the right hip; note the difference in the shape of the femoral head.
- Combined: Combined impingement just means that both the pincer and cam types are present.

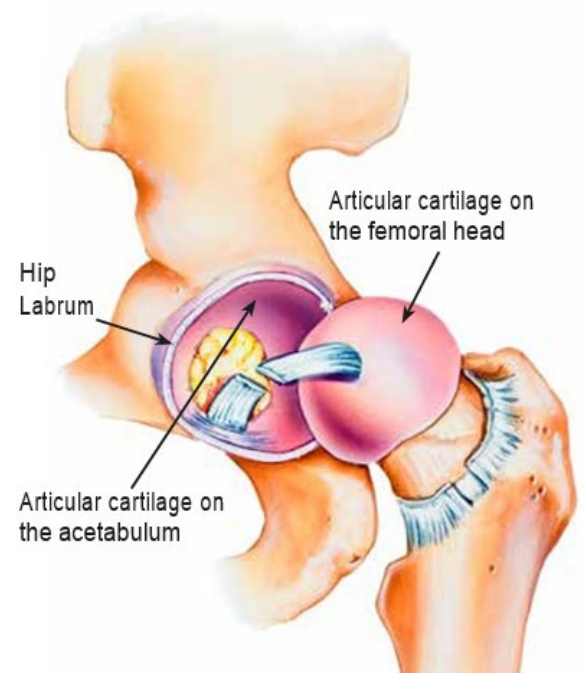


Figure 1 – Normal hip anatomy



**Figure 2:** Frog leg radiograph: The thin arrow on your left indicates the area of “flattening” of the right femoral head and lack of the normal femoral head-neck offset. The thick arrow on the right indicates the more normal, rounded contour of the left femoral head

Cam and pincer impingement can co-exist. When the normal ball and socket function is lost, impingement may occur as the hip is flexed toward its end range. This is often made worse with turning the leg inward and bringing it upward (internal rotation and flexion).

Repetitive motions that impinge the hip can cause labral tears and fissuring of the acetabular articular cartilage. Labral tears can cause sharp, catching pain, popping, or locking during activities including running, kicking or change of direction movements. Most people with this injury will also experience more subtle, dull, activity-induced positional pain while sitting and sleeping on the affected side. People will often describe a deep discomfort in the anterior groin while sitting. People may also describe pain on the side of their hip and/or deep in the buttocks. Flaps from damaged articular cartilage may cause mechanical symptoms (e.g. locking, catching, clicking, popping) often causing pain during or after weight bearing and impact activities, such as running and jumping.

Non-painful labral tears do exist, in fact over 73% of people over age 50 have labral tears seen on MRIs, with no symptoms. In pediatric patients (aged 2-18 years) the rate of asymptomatic labral tears is quite low, about 1.4%. Non-operative treatment for painful labral tears is not always successful and arthroscopic repair of the labrum and re-contouring of the femur and the acetabulum is suggested when clinical tests and imaging studies have indicated that the hip pain is due to the labral tear. Repairing the labrum and shaving down bone associated with impingement helps correct the normal ball and socket motion of the hip and restore the normal suction seal of the hip joint.

## Hip Arthroscopy Procedures

Hip arthroscopy is performed on an outpatient basis under general anesthesia. The hip is placed in traction to open the joint enough to allow for the insertion of the instruments. After marking out the anatomical landmarks with x-ray guidance, three to four small incisions are made around the hip joint. One incision is used to insert a camera that displays the inside of the hip joint on a monitor and the other incisions are used to insert the surgical instruments used for repairing the labral tear, debriding defective cartilage, removing bone associated with pincer impingement and removing loose bodies. The anterior hip joint capsule is entered using a small incision called a capsulotomy. In addition to the labral tear, FAI is treated using a burr to reshape the femoral head-neck offset. This is called a proximal femoral osteoplasty. The goal is to restore the normal ball on socket function so that the hip can move through the full range of motion without impingement. Hip arthroscopy can also be used to treat articular cartilage lesions inside the joint and the pain generators directly outside of the hip joint including mechanical symptoms due to the iliopsoas tendon as it crosses the front of the joint and hip abductor tendon tears.

Treatment of articular cartilage lesions is done by creating small holes in the subchondral bone of the defect to promote the inflow of blood and stem cells in the hopes that these elements will lead to the growth of fibrocartilage to fill the chondral defect. Although the fibrocartilage is not as strong as the original hyaline cartilage, it does act to increased the continuity of the surface.

Hip arthroscopy also can address hip abductor (gluteus medius and minimus) tendon tears. Suture anchors are placed in the greater tuberosity and then the sutures are passed through the torn tendon and brought back to their anatomic location on the femur. This is comparable to a rotator cuff repair in the shoulder. To allow the tendon to heal back to the bone after this procedure, weight bearing and strengthening exercises will be limited in the first post-operative rehabilitation phase.

Pain in the front of the hip can arise from the iliopsoas bursa, muscle and/or tendon and can occur with or without snapping. Non-painful snapping is common in hypermobile athletes. Non-operative treatment (physical therapy and/or iliopsoas bursa injections) is often successful in getting more than 66% of patients experiencing iliopsoas pain back to full activity. Surgical lengthening of the iliopsoas tendon is not recommended because is a possibility of chronic hip flexor weakness and pain because of this procedure.

## Hip Arthroscopy Rehabilitation

When the hip arthroscopy procedure is scheduled a pre-operative rehab appointment will also be scheduled to provide education and training regarding post-operative precautions on range of motion and weight bearing, demonstrate early rehab exercises and teach you how to walk with crutches with 20% of your body weight.

Rehabilitation of the hip begins the 1-3 days after surgery. Each patient will progress at a different rate depending on the specific procedure performed, age, preinjury health status and rehab compliance. The patient may also have postoperative hip and thigh pain which can slow the recovery rate. This can be caused by traction on the hip during surgery. Aggressive range of motion (ROM) is avoided to protect the repaired labrum, the repair of the capsulotomy, and the now sensitive bony areas that have been recontoured. It is important to use crutches for the first two to three weeks after surgery to minimize forces on the back and pelvic joints while developing pain control, protecting repaired structures, and avoiding compensatory habits that can prolong post-operative pain. All exercises should be performed within pain tolerance. Pushing to extremes of motion beyond pain tolerance does not enhance function but rather increases discomfort and prolongs rehabilitation. Rehab in the first 6 weeks following hip arthroscopy emphasizes muscle activation and hip stability, working within range of motion restrictions.

### Rehabilitation Principals:

1. Patients should stand and walk with 20% of their body weight and their foot flat on the ground, on their surgical leg for the first 2 weeks after their procedure. Your physical therapist can help you feel this. Crutches or another assistive device should be used unless your physician or your physical therapist allows you to discontinue use.
2. Active assistive range of motion exercises are begun early (the first 1-3 days after surgery), but range of motion restrictions for hip external rotation and extension need to be followed to protect the labral and capsular repairs. Hip stability, rather than mobility, is most important in the early stages.
3. Range of motion is completed to lubricate the joint rather than aggressively stretch articular and periarticular structures.
4. Muscle strengthening exercises are to be done during the first week after surgery. Progressive strengthening depends upon the patient's tolerance. Patients should avoid exercises that heavily activate the iliopsoas during the first several weeks after surgery, such as straight leg raises and resisted hip flexion.



## Hip Arthroscopy Procedures

### Frequently asked questions:

1. When can I shower?

You will be able to shower 72 hours after surgery. Cover your stitches with a barrier such as Glad Press and Seal, waterproof Band-Aids or plastic wrap with the edges taped down to protect them from getting wet.

2. What if there is drainage from my stitches?

This is normal. Fluid is put into the joint to perform the surgery, so this fluid can slowly seep out into the soft tissue of the hip and may subsequently leak out of your incisions after surgery. It should be mostly clear but may look a little yellow or be slightly bloody. It should not have an odor.

3. What if my incisions open up slightly after sutures are removed?

This can happen after suture removal. As long as there is minimal drainage, this is ok. Place bandages over the incision until it fills in on its own.

4. When will my numbness go away?

Common numbness on the outside of the thigh normally resolves slowly over a few days to a few weeks.

5. Is it normal for my leg to feel cold and look a little discolored?

Yes, this can be a normal occurrence following hip arthroscopy. This is usually more related to the decreased weight bearing and limitation in movement after surgery than to the surgery itself. As your activity level normalizes the temperature and color changes resolve as well.

6. When can I drive?

You must be off all opioid pain medicine (such as hydrocodone) during waking hours before you can drive. This applies even if the hip you had surgery on is not your driving leg. Tylenol, naproxen or other nonsteroidal anti-inflammatory drugs are okay to take while driving. If the surgery does involve your driving leg, you must be able to move comfortably from gas to brake and be able to get in and out of the car easily. This often takes 2-3 weeks,

corresponding to the time when you are able to get off crutches, but can take as long as 6 weeks.

7. When will I be released for sports and activities?

Clearance for return to sport will be determined by your surgeon with input from your rehab provider. Starting at 10 weeks there are tests at various intervals that your rehab provider will have you perform to make sure that your pain, strength, and range of motion are progressing at an appropriate rate.

- Riding a stationary bike – most patients can start gentle pedaling for hip range of motion within a few days of surgery. To ride at an intensity for aerobic exercise can usually start three weeks after surgery
- Jogging – can usually begin around week 12
- Most patients will be released to full, unrestricted activity between 4 and 6 months after surgery. Specific testing performed in sports rehabilitation will guide the timeline for this return.

## Hip Arthroscopy Procedures

### PHASE I (Surgery to 3 weeks)

<p><b>Rehabilitation appointments</b></p>	<ul style="list-style-type: none"> <li>• Rehab appointments begin 1- 3 days after surgery, weekly after</li> </ul>
<p><b>Rehabilitation goals</b></p>	<ul style="list-style-type: none"> <li>• Protect the post-surgical hip through limited weight bearing</li> <li>• Restore normal hip ROM within ROM restrictions, gentle grade I-III joint mobilizations can be used as needed</li> <li>• Normalize gait</li> <li>• Restore leg control</li> </ul>

<p><b>Precautions</b></p>	<ul style="list-style-type: none"> <li>• Avoid external rotation past 30° and hip hyper-extension for six weeks. Hip extension required for normal gait is allowed.</li> <li>• May initially weight bear with 20% of body weight, flat foot weight bearing, for all procedures.</li> </ul>
<p><b>Labral Repair Precautions (Including Osteoplasty for FAI)</b></p>	<ul style="list-style-type: none"> <li>• Use axillary crutches for normal gait. Use flat foot weight bearing at 20% body weight at first PT appointment and for the first 2 weeks.</li> <li>• When the patient is 2 weeks post op they may advance to WBAT, but should still use crutches initially. By the end of the 3rd week they are often using a single crutch or cane for short distances in safe environments. Many patients are finished with their crutches by 4 weeks.</li> <li>• Avoid exercises that engage the iliopsoas during the first several weeks after surgery. Iliopsoas tendonitis is a known side effect of hip arthroscopy but can be avoided with appropriate post-operative care, including avoiding exercises that have high activity of the iliopsoas (straight leg raises, clam exercises and resisted hip flexion)</li> <li>• Avoid passive unilateral hyper-extension for 6 weeks (prone lying and prone on elbows is okay)</li> </ul>
<p><b>Abductor Repair Precautions</b></p>	<ul style="list-style-type: none"> <li>• No active abduction for 6 weeks</li> <li>• No passive adduction, internal rotation (IR) or external rotation (ER) for 6 weeks</li> <li>• Partial 20% weight bearing with crutches for 4-6 weeks</li> </ul>
<p><b>Range of Motion and Suggested Therapeutic Exercises</b></p>	<p>At the first postoperative appointment the following activities are appropriate:</p> <ul style="list-style-type: none"> <li>• Quad sets and gluteal sets</li> <li>• Hip IR/ER isometrics</li> <li>• Bridging</li> <li>• Seated knee extension</li> <li>• Prone or prone on elbows stretch</li> <li>• Prone knee flexion</li> <li>• Gentle prone hip internal rotation</li> <li>• Prone heel squeeze</li> <li>• Quadruped rocking, but avoiding pinching with hip flexion</li> <li>• Quadruped upper extremity lift</li> <li>• Quadruped cat-camel/cow lumbopelvic ROM</li> <li>• Standing combined hip extension and abduction in oblique plane</li> </ul> <p>When patient has advanced to WBAT the following are appropriate (2 weeks postoperatively)</p>

	<ul style="list-style-type: none"> <li>• Partial squats</li> <li>• Single leg or tandem balance</li> <li>• Gait drills</li> <li>• Sidestepping in partial squat position</li> <li>• Quadruped bird dog</li> </ul>
<b>Progression Criteria</b>	<ul style="list-style-type: none"> <li>• Normal gait without assistive device on level indoor surfaces with full weight bearing and minimal to no pain</li> <li>• Good leg control at low velocity of movement</li> <li>• Functional ROM without pain</li> <li>• At least 3 weeks post-op</li> </ul>

**PHASE II (begin after meeting phase I criteria, about 3 weeks)**

<b>Appointments</b>	<ul style="list-style-type: none"> <li>• Rehabilitation based on patient progress, 1- 2 times every 1-2 weeks</li> </ul>
<b>Rehabilitation Goals</b>	<ul style="list-style-type: none"> <li>• Regain and improve muscular strength</li> <li>• Wean off crutches for all surfaces and distances</li> <li>• Single leg stand control</li> <li>• Good control and no pain with functional movements, including step up/down, squat, partial lunge</li> <li>• Can begin stretches such as hip external rotation/butterfly, 1/2 kneeling or standing hip flexor, adductor stretches at 6 weeks post op</li> <li>• More aggressive, grade III-IV joint mobilizations can be used to gain ROM as needed</li> </ul>
<b>Precautions</b>	<ul style="list-style-type: none"> <li>• Post-activity soreness should resolve within 24 hours</li> <li>• No ballistic or forced stretching</li> <li>• Avoid post-activity swelling or muscle weakness</li> <li>• Be cautious with repetitive hip flexion activities, such as treadmill and Stairmaster</li> </ul>



<p><b>Suggested Therapeutic Exercises</b></p>	<ul style="list-style-type: none"> <li>• Stationary bike</li> <li>• Gait and functional movement drills in pool once incisions are healed</li> <li>• Standing hip abduction</li> <li>• Split squat or elevated split squat</li> <li>• SPRI band work (avoiding excessive hip flexor work)</li> <li>• Pallof presses in squat or split squat</li> <li>• 1/2 kneeling balance, trunk rotation and pallof press work</li> <li>• Single arm rows in split stance with/without trunk rotation</li> <li>• Hip hinging</li> <li>• RDL</li> <li>• Single leg bridge</li> <li>• Side bridge or side plank</li> <li>• NOTE: May begin to ease into hip flexor strength work, including segmental sit back with both eccentric emphasis and isometric holds, trunk curl, Sahrman supine march work.</li> </ul>
<p><b>Cardiovascular Exercise</b></p>	<ul style="list-style-type: none"> <li>• Non-impact endurance training; stationary bike, NordicTrack, swimming, deep water run, cross trainer</li> </ul>
<p><b>Progression Criteria</b></p>	<ul style="list-style-type: none"> <li>• Normal gait on all surfaces</li> <li>• Ability to carry out functional movements without unloading affected leg or pain, while demonstrating good control</li> <li>• Be able to complete 10 single leg or split squats and pass or train for y-balance or star excursion balance testing</li> </ul>

**PHASE III (begin after meeting phase II criteria, about 9-16 weeks)**

<p><b>Appointments</b></p>	<ul style="list-style-type: none"> <li>• Rehabilitation based on patient progress, 1-2 times every 1-2 weeks</li> </ul>
<p><b>Rehabilitation Goals</b></p>	<ul style="list-style-type: none"> <li>• Improve muscular strength and endurance</li> <li>• Good control and no pain with sport/work specific movements, including impact activities</li> </ul>
<p><b>Precautions</b></p>	<ul style="list-style-type: none"> <li>• Post-activity soreness should resolve within 24 hours</li> <li>• Be cautious with forceful hip flexion activities such as kicking and sprinting</li> </ul>

<b>Suggested Therapeutic Exercise</b>	<ul style="list-style-type: none"> <li>• Multi-planar strength progression, including forward, lateral and diagonal lunges</li> <li>• Impact control exercises beginning 2 feet to 2 feet, progressing from 1 foot to other and then 1 foot to same foot then progress from single plane drills to multi-plane drills</li> <li>• Dynamic control exercise beginning with low velocity, single plane activities and progressing to higher velocity, multi-plane activities</li> <li>• May use agility ladder</li> <li>• Progress to running program once patient can demonstrate good single leg landing control in a repetitive fashion without pain</li> <li>• Begin sport specific drills once patient demonstrates good control with the impact control and multi-plane exercises and can tolerate running program without pain</li> <li>• Sport/work specific balance and proprioceptive drills</li> <li>• Hip and core strengthening</li> <li>• Stretching for patient specific muscle imbalances</li> </ul>
<b>Cardiovascular Exercise</b>	<ul style="list-style-type: none"> <li>• Replicate sport/work specific energy demands</li> </ul>
<b>Return To Sport/Work Criteria</b>	<ul style="list-style-type: none"> <li>• Normal gait on all surfaces</li> <li>• Dynamic neuromuscular control with multi-plane activities, without pain or swelling</li> <li>• Pass progressive testing including agility, hop, jump, squat tests</li> </ul>

These rehabilitation guidelines were developed collaboratively between UW Health Sports Rehabilitation and the UWHealth Sports Medicine physician group.

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