



Virtua Reconstructive Orthopedics
SPORTS MEDICINE & ARTHROSCOPY

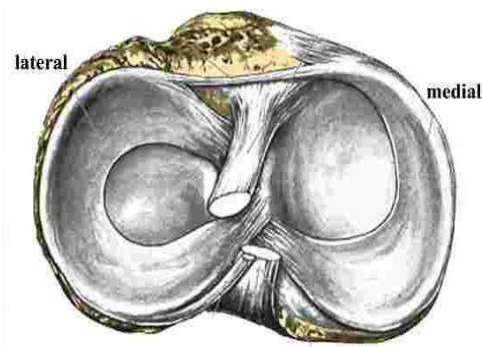
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KNEE ARTHROSCOPY

The meniscus is a crescent shaped cartilage that acts as a shock absorber between the femur (thigh bone) and tibia (shin bone). Each knee has two menisci: medial (inner) and lateral (outer). There is an additional type of cartilage in the knee joint called articular cartilage. This is a smooth, white glistening surface that covers the ends of the bones. The articular cartilage provides lubrication and as a result, there is very little friction when the joint moves. Either by virtue of regular wear and tear on your knee joint, or an acute injury these cartilages can become torn and cause pain. These tears are often accompanied by swelling, and can occasionally be accompanied by sensations of popping, grinding, buckling or having the knee lock in place.

The mainstay of treatment for a meniscus tear is non-operative. A short course of activity modification (refraining from sports or activities that hurt the knee), ice, anti-inflammatory medication and elevation will usually relieve the acute symptoms. Physical therapy and exercises aimed at strengthening the muscles around the knee joint (the hamstrings and quadriceps) can often be helpful. The majority of patients with meniscal tears or cartilage injuries do not require surgery. However, there are a small percentage of patients who continue to have symptoms despite a course of conservative treatment.



medial and lateral menisci viewed from above

Some portion of the pain may be from osteoarthritis, whereby the cartilage lining the knee joint has simply worn away. This may be due to an injury earlier in life, or there may be a genetic component as well. Pain from arthritis may be due to inflammation in the lining of the knee joint (called synovitis), small fractures of the bone under the cartilage (called subchondral bone), stretching of nerve fibers over bone spurs that form (called osteophytes), and loose bone chips in the joint.



Another portion of the pain may be mechanical in nature, whereby the torn piece of meniscus or articular cartilage gets trapped in the joint and causes sharp episodes of pain, which can take a few days to resolve. Persons who have pain of this nature can often have repeated episodes of having the meniscus or cartilage piece become trapped.

For those patients that fail to improve with non-operative treatment there are surgical options available to try and alleviate some of their symptoms. Arthroscopy is a surgical procedure that orthopedic surgeons use to visualize, diagnose and treat problems inside of a joint. In an arthroscopic examination, the doctor makes a small incision in the patient's skin and inserts pencil-sized instruments that contain a small lens and lighting system to magnify and illuminate the structures inside the joint. The doctor can then determine the amount and type of injury, and then repair or correct the problem, if it is necessary.

In general, arthroscopic surgery of the knee is a reliable means of addressing pain from mechanical symptoms from a torn meniscus or piece of cartilage. It is, however, less predictable in its ability to relieve pain from osteoarthritis. The degree to which your knee improves after arthroscopic surgery largely depends on the degree to which your knee pain stems from osteoarthritis and the degree to which your pain stems from a mechanical cause.

The risks of arthroscopic knee surgery include but are not limited to:

- Infection
- Bleeding
- Excessive swelling
- Blood clots
- Joint stiffness
- Pain, postoperative and/or persistent

Although the puncture wounds are small and the pain in the joint that underwent arthroscopy is minimal, it takes several weeks (6-8, sometimes longer) for the joint to maximally recover. A specific activity and rehabilitation program may be suggested to speed your recovery and protect your future joint function. It is not unusual for patients to go back to work or school or resume daily activities within a few days. Athletes and others who are in good physical condition may in some case return to athletic activities within a few weeks.

Remember, though, that people who have arthroscopy can have many different diagnoses and preexisting conditions, so each patient's arthroscopic surgery is unique to that person. Recovery time will reflect that individuality. It is very rare that your recovery will be the same as that of a friend or family member who also had "arthroscopic surgery."



Postoperative Instructions

You will wake up in the operating room with an ice pack in place. You will also have white compression stockings on both legs. These are to help prevent blood clots and should be worn for the first two weeks following surgery.

You will be sent home with a prescription for pain medication. In addition to the pain medication you should take one adult strength aspirin every day for 14 days, in order to help prevent blood clots. The pain medication can make you constipated. If this is the case, take an over the counter stool softener such as Colace while taking the pain medication.

You will be sent home from the recovery room after a few hours. You will need someone else to drive you home.



Activities and advice for in the hospital and while at home:

1. Please call with any concerns: (609) 747-9200
2. Apply ice to the knee, as it will be quite helpful. After two days, you can change the dressing to a smaller one to allow the cold to better get to the knee. Be sure to leave the little pieces of tape (steri-strips) in place.
3. After two days it is okay to shower and get the wound wet, but do not soak the wound as you would in a bath tub or hot tub.
4. After knee surgery there is a variable amount of pain and swelling. This will dissipate after several days. Continue to take the pain medicine you were prescribed as needed. Remember it is called pain control, not pain elimination. If you notice calf pain or excessive swelling in the lower leg, call your doctor.
5. It is important to look out for signs of infection following surgery. These can include: fever (temperature $> 101.5^{\circ}$, chills, nausea, vomiting, diarrhea, redness around your incision, or yellow or green drainage from your incision. Should any of these be present please contact Dr. Mc Millan's office immediately.
6. You will have crutches after surgery. These are for your comfort only. When you feel like you no longer require the crutches for walking, it is fine to discontinue using them.
7. You will have an office visit scheduled approximately 10-14 days after your surgery.



REHABILITATION AFTER KNEE ARTHROSCOPY

Phase I: Maximum protection phase (Weeks 1-4)

Goals:

1. Reduce inflammation/effusion
2. Allow early healing
3. Full passive knee extension
4. Gradually increase knee flexion
5. Restore quadriceps voluntary activation

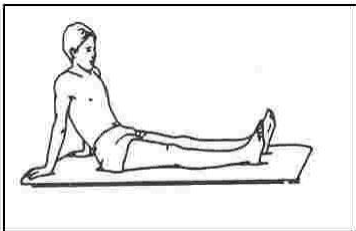
Activities:

1. The **novocaine** that is put in your knee at the time of surgery lasts six to eight hours. Begin taking the pain medication when you start feeling sensation return. The knee will be painful for several days after the arthroscopy.
2. You can bear full weight and **walk** on the leg unless otherwise instructed by the doctor. In some instances, crutches can be used for a period of time if walking is uncomfortable. You may discontinue using crutches as soon as you feel comfortable doing so.
3. Remove the outer **bandage** when you get home and apply cold directly to the knee. Change the bandages whenever needed.
4. Gently **move** the knee (flexion and extension) as much as you can to prevent stiffness.
5. Apply **cold** to reduce pain and swelling. Use ice on the knee 20 minutes/on and 20 minutes/off for the first day when awake. Then apply cold as often as needed for 15 to 20 minutes at a time for the next several days. Place a towel or cloth between the skin and the ice to prevent skin injury.
6. Wrap an **elastic bandage** (ace) around the knee at other times to control swelling.
7. You may **shower** and get your incision wet after two days. Do not soak the incision in a bathtub or Jacuzzi for at least two weeks after surgery. If there is any drainage from the wound, do not get the wound wet.
8. Take an **aspirin** each morning.
9. Wear an **elastic stocking** (TED) below the knee, and do at least 10 ankle motion exercises each hour to control swelling and to help prevent blood clots in the veins.
10. You should have an appointment to see physical therapy by 5 days. You will see Dr. Mc Millan in 10-14 days.

Stage I Exercises: week 1 (prior to starting PT)

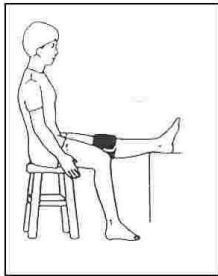
Program: 7 days per week, 3-4 times per day.

Quadriceps setting	1-2 sets	15-20 reps
Heel prop	5 minutes	
Heels slides with towel assist	5-15 minutes	
Sitting heel slides	1-2 sets	15-20 reps
Patellar mobilization	1 set	15-20 reps
Ankle pumps	10 per hour	



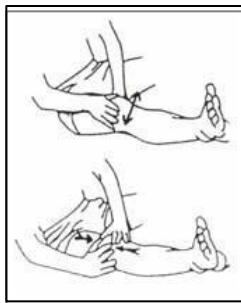
Quadriceps Setting

Lie or sit with knee fully straight. Tighten and hold the front thigh muscle making the knee flat and straight (this should make your knee flatten against the bed or floor). Hold 5 seconds for each contraction.



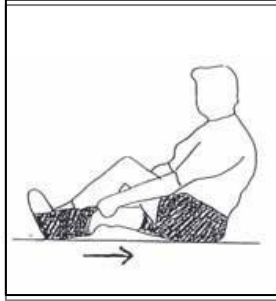
Heel Prop

Lie on your back with a rolled up towel under your heel, or sit in a chair with the heel on a stool. Let the knee relax into extension (straight). If the knee will not straighten fully, you can place a small weight (2-5 lbs) on the thigh just above the knee cap. Try to hold for 5 minutes. Try to practice quadriceps setting in this position.



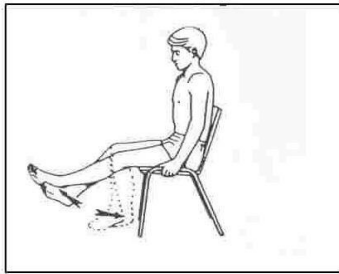
Patellar Mobilization

With the knee fully extended, grasp the edges of your knee cap between your thumb and index finger. Move the knee cap side to side and up and down.



Heel slides with towel assist

While sitting or lying on your back, actively slide your heel backward to bend the knee. Hold this bent position for five seconds then slowly relieve the stretch and straighten the knee. While the knee is straight, you may repeat the quadriceps setting exercise. You can assist by using a towel to pull your heel back.



Sitting Heel Slides

While sitting in a chair or over the edge of the bed, support the operated leg with the uninvolved leg. Lower the operated leg, with the unoperated leg controlling, allowing the knee to bend. **Do not go past 60° of bend at the knee.** Hold for 5 seconds and slowly relieve the stretch by lifting the foot upward with the uninvolved leg to the straight position.



Stage 2: Weeks 2 through 4

This stage will begin once you begin working with your therapist. In addition to demonstrating these exercises, your therapist will give you a home exercise program. It will be important to perform these exercises daily in order to ensure maximum results after your surgery.

Exercises:

- Gradually increase PROM as tolerated
 - Week 2: 0-125 degrees
 - Week 3: 0-135 degrees
 - Week 4: 0-145 degrees
- Stretch hamstrings, calf, hip flexors
- Strengthening exercises (electrical stimulation to quads):
 - Quad sets
 - SLR flexion
 - Hip Abduction/Adduction
 - Knee extension 90-40 degrees
- Mini Squats 0-50/60 degrees SLR (all 4 planes)
- Knee extension 90-0 degrees
- CKC mini-squats 0-45 degrees
- CKC wall squats 0-60 degrees
- Initiate CKC exercises
- Lateral and front step overs
- Lateral lunges
- Step downs (lateral)
- Step downs (front)
- Bicycle
- Pool exercises (once incision is closed and dry)
- Avoid active resisted knee flexion



Phase II: Intermediate phase (weeks 4-6)

Goals:

1. Full PROM
2. Minimal to no swelling/inflammation
3. Restore quadriceps strength
4. Gradually increase functional activities

Activity:

1. You can bear weight and walk on the leg as much as you are able. Try to avoid limping and walk with a heel - toe pattern. Avoid walking for long distances for 4 to 6 weeks after surgery.
2. Continue to ice the knee to reduce pain and swelling. Ice the knee three times a day for 15 to 20 minutes. Always place a towel or cloth between the skin and the ice to prevent skin injury.

Exercises:

- Continue ROM and stretching to maintain 0-135 degrees
- Progress strengthening exercises
 - Leg press 70-0 degrees
 - Knee extension 90-40 degrees
 - Hip Abduction/Adduction
 - Wall squats 0-70 degrees
 - Vertical squats 0-60 degrees
 - Lateral step-ups
 - Front and lateral lunges
 - Hamstring curls
- Balance/proprioception training
- Biodex stability
- Squats rocker board
- Cup walking (step overs)
- Standing on foam single leg
- Bicycle (if ROM permits)
- Pool program (may begin running in pool)
- Elliptical
- At week 6 may begin treadmill walk/run program



PHASE IV: RETURN TO ACTIVITY PHASE (Week 6 and beyond)

Goals:

1. Improve strength and endurance
2. Prepare for unrestricted activities

Criteria to progress to Phase IV

1. Full non-painful ROM
2. No pain or tenderness
3. Satisfactory clinical exam
4. Satisfactory isokinetic test

Exercises

- Continue and progress all strengthening exercises and stretching drills
- Deep squatting permitted at 4 months (nothing past 90⁰)
- Initiate straight line running: 4 months
- Initiate pivoting and cutting: 5 months
- Initiate agility training: 5 months
- Gradually return to sports: 6 months