The Patient’s Guidebook for Knee Surgery
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How Does Your Knee Work?

The knee is an important link in an elegant mechanism that allows humans to walk upright. The knee provides the leg with the necessary flexibility to allow locomotion. The knee also functions as sort of a shock absorber. As the foot hits the ground during walking the knee automatically bends to gently cushion the blow.

The knee joint is made up of four bones: The femur (thigh bone), patella (knee cap – not in figure), tibia (shin bone), and fibula (figure 1). The femur and the tibia are the largest bones and make up what is commonly thought of as the knee joint. The patella is a kind of floating bone that sits in front of the femur and tibia to provide protection to the joint. When you bend and straighten your leg your knee cap glides against a part of the thigh bone called the trochlea (figure 1). The fibula is the smaller of the lower leg bones and provides attachment for important muscles and ligaments of the knee.

Movement is promoted by a series of powerful muscles that surround the knee. The major muscles include the quadriceps, adductors, hamstrings, and gastrocnemius (figure 2). The strength and endurance of these muscles are critical to the performance of the knee. Although the muscles are important in maintaining stability, the ligaments are the primary stabilizers in the knee joint.
Ligaments are structures made of connective tissue (gristle) and connect one bone to another. There are four major ligaments in the knee: anterior (front) cruciate ligament (ACL), posterior (back) cruciate ligament (PCL), medial (inside) collateral ligament (MCL), lateral (outside) collateral ligament (LCL) (figure 3). The collateral ligaments stabilize the knee in side to side directions while the cruciate ligaments stabilize in front to back movements (figure 4).

The weight bearing surfaces of the knee are made of two kinds of cartilage. The first is called hyalin cartilage which forms a smooth coating on the end of the bones. The second type is the meniscus (fibrocartilage) (figure 5). The two menisci are like gaskets between the bones. Among other things the menisci function as shock absorbers for the knee. Significant damage to either of these structures can effect the long term function of the knee. In cases of severe injury, arthritis can eventually occur.

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What is an Arthroscopy?

An arthroscope (arthro-joint, scope- to look) is a device that is 3/16 of an inch in diameter and 8 inches long which is linked to a video monitor via a fiber optic cable (figure 6).

The arthroscope is inserted into the knee joint through a small puncture hole (portal) and can be manipulated to see all of the contents of the knee joint. There is also an assortment of tools that can be inserted through additional portals. These tools are used to help repair or remove injured tissue.

With the aid of the arthroscope any injury to the joint surface cartilage and menisci is assessed. Damage to the joint surface cartilage is treated by removing loose fragments of cartilage and smoothing the injured surface.

If one or both of the menisci are torn, partial removal or repair of the torn meniscus is performed. If a repair is not feasible we opt to remove the injured portion of the meniscus. The remainder of the meniscus is left behind to maintain as much of it’s function as possible.
Any surgery that we perform has certain documented risks. These potential problems can arise even if the surgery is carefully planned and performed. The most notable risks are outlined below. Fortunately the incidence of such complications with elective knee surgery is very low. Certain factors may slightly increase your potential risk such as previous operations on the same knee or coexisting medical conditions such as diabetes, heart ailments, etc. Our surgical team will discuss any such condition prior to surgery if it may have a potential impact on your recovery. The following risks appear in the order of frequency:

**Peri-operative risks**

1. **Anesthetic complications**
   - **Sore throat**—only occurs in patients who undergo general anesthetic and is due to the breathing tube used to provide airflow to your lungs.
   - **Nausea**—occurs from the various drugs that are used during anesthesia. The newer drugs have a lower risk and several anti-nausea medications are available to minimize the symptoms.
   - **Serious complications**—More worrisome complications such as severe drug reactions and death are fortunately extremely rare. These risks from anesthesia are said to be lower than the chance of being hit by a car!
2. **Bleeding**: Bleeding is expected during surgery because of the generous blood supply to the knee. We use special instruments to cauterize small blood vessels which therefore minimizes bleeding. Blood loss during most knee surgeries is less than 1 to 2 ounces.

3. **Infection**: rarely occurs. The risk has been estimated at roughly 1 in 300 surgeries. If an infection does occur then further surgery and antibiotics may be necessary to treat the problem.

4. **Nerve damage** to the major nerves of the knee and leg is extremely rare. **Damage to the small skin nerves around the incision is expected. This typically leaves patients with a half-dollar sized area of numbness next to their incision.** There are no functional consequences because of the numbness.

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**Post-operative risks**

1. **Stiffness**: In a small percentage of patients the knee becomes stiff after surgery (ie—loses mobility) due to scar tissue formation. This can be a result of poor effort during rehabilitation or in some cases occurs for no obvious reason. In most cases the condition is temporary and resolves with diligent rehabilitation. In less than 2% the condition is permanent.

2. **Re-injury**: If you are undergoing a reparative or reconstructive procedure bear in mind that we can’t make your knee better than new! If you should fail to comply with your rehab program or sustain a significant injury after surgery the result may be compromised.
Planning Before Your Surgery?

Special Tests

It is most likely you have already had knee X-rays by your family doctor or in our clinic. If necessary you may have to undergo other tests such as an MRI (magnetic resonance imaging).

General Medical Check-up

This is only required for individuals who have history of certain medical conditions (e.g., heart ailments, lung disease, etc.). In some cases surgery needs to be postponed while further testing or treatment is initiated.
The Day of Surgery

Check-in

You will have to register at the hospital on the day of surgery. The specific time and location will be given to you during your office visit or by mail. Please be prompt! Failure to arrive on time unnecessarily delays not only your surgery but those who are having surgery after you. If you are significantly late your surgery will be canceled. You will be asked to arrive at least 2 hours before the actual surgery time. This is to allow for the registration process and pre-operative consultation with the anesthesiologist. After you have registered a nurse will check you into the surgical holding area (figure 7), ask you several questions relating to your past health, and take your temperature, blood pressure, etc. You will then be asked to change into a hospital gown.

Anesthesia

The nurse will start an intravenous (I.V.) line which will be used to deliver medications to your bloodstream during and after surgery. Immediately before surgery the anesthesiologist will discuss the details of your anesthetic. Any questions you have regarding anesthesia should be addressed to the anesthesiologist at this time.

Surgery

After you have been prepared the nurse from the operating room will take you to the surgery area. You will be asked to wear a surgical cap to cover your hair. After being checked in a second time you will be
wheeled into the operating room (figure 8) (Please note that you will be asked many of the same questions on several occasions). This is merely to prevent any important information from “slipping through the cracks” (We appreciate your patience). The surgical team is composed of the surgeon, his assistant(s), 2 to 3 nurses or surgical technicians and the anesthesiologists. The temperature in the room is typically lower than normal and warm blankets will be provided. Once the anesthesiologist is prepared he will administer medicine which will make you feel relaxed. Afterward more medicine will cause you to fall asleep. Surgical time varies from case to case but we will make a time estimate for your family so they can plan appropriately. After surgery Dr. Sallay will talk to family members to update them on your surgery. Please make sure that family members are available at this time.

Figure 8: The operating room with the TV that is used to “see” the inside of your knee

Post-Anesthesia Recovery Unit (PACU)

When you awaken from the anesthetic you will be in the PACU. A nurse will be assigned to monitor your progress and address your needs. After you have stabilized you will be transferred to your room. It is only at this time that your family members will be able to see you. Family members are not allowed in the main recovery area because of the need to maintain the privacy of the other patients.
Limitations after Surgery

Activity

One of the most important goals after your surgery is to limit swelling in your knee. Although the CryoCuff helps to minimize swelling, your activity, being up on your feet, has the most impact on swelling. For the first **four days** after surgery you should minimize the amount of time you are on your feet. **You should only get up to go to the bathroom or to shower.** At all other times you should be laying down with your leg propped up in the CPM machine or performing your exercises. Our experience has shown that those patients who are on their feet too much experience more swelling and then struggle more with rehab.

Work/School

In general it is ideal to be off work for **4-7 days**, depending on your job description. In some cases it is appropriate to return to a part-time, or light duty schedule at first. For students who are in school surgery is typically performed on a Thursday to allow recovery over the weekend or it is done during a naturally occurring break in the term such as Christmas or spring break.

Driving

You should **not** drive for at least **4-7 days** after surgery. If you had surgery on your right knee it may take up to 1-2 weeks to drive comfortable.
What to Expect at Home

Physical Therapy Exercises

Although the surgery itself is an important step in restoring our knee function, physical therapy is equally important to ensure a good result from the surgery. **A poor understanding of how to perform the exercises correctly, or lack of motivation and consistency on your part to perform the exercises, can seriously jeopardize the final outcome of your operation.** Therefore it is important to read this material carefully and perform all the exercises prescribed every day unless Dr. Sallay or your physical therapist have advised you differently.

*Note– all exercises are done during waking hours only*

**Heel props—ten minutes every hour:** This exercise is designed to maintain full hyperextension (straightening) of your knee. Patients who lose the ability to fully straighten their knee after surgery often suffer from chronic pain in the front of their knee. Performing this exercise soon after your operation allows you to easily maintain the ability to straighten your knee. You should prop your leg off of the bed using a rolled blanket or towel (figure 9). It is important that your knee doesn’t touch the bed so that it can fully straighten. Also your knee cap should be pointing straight up, this ensures that your knee can achieve the most straight position.

**Quad sets—fifteen repetitions every hour:** The quadriceps muscles rapidly become very weak after surgery. To minimize strength loss after surgery gentle quadriceps setting exercises are performed. Keeping your knee straight you flex or “set” the quadriceps muscles (figure 10). You may find it difficult at first to get the muscle to work. With diligence and practice you’ll get the hang of it.
**Straight leg raise—fifteen repetitions four times a day:** This exercise also helps strengthen your leg. To perform this exercise, straighten knee and concentrate on locking it in that position. Now pick your foot up about 12 inches off the bed and hold it there for count of four seconds (figure 11). The first week after surgery you may find it difficult to keep your knee perfectly straight, this will improve with time.

**Heel slides—fifteen repetitions four times a day:** This exercise helps you regain your ability to bend your knee. There are two ways of performing this exercise. You can sit on the floor or in bed and simply slide your heel backwards as your knee bends (figure 12). The first few days after surgery this can be difficult because you may not have the strength to bend it well on your own. The second method involves securing your foot against the end of the bed and sliding your body towards your foot. Some patients are afraid to push this exercise because they are afraid their stitches will pull out. Don’t worry about that. You can’t harm the incision by doing this exercise.

**Goals:** By the time you return to Dr. Sallay’s office one week after surgery you should:
- have full straightening of your knee equal to your opposite side
- be able to easily lift your leg with minimal bend in your knee
- be able to bend your knee to at least 90 degrees (right angle or more)
- have minimal swelling in your knee
- partial weight bearing with crutches to full weight bearing when walking normally without a limp or bent knee
Medications and Pain Management

You will be given a prescription for pain medication, typically Vicodin or Oxycontin and you will also take Aleve which can be obtained over-the-counter. You should stop on your way home to fill your prescription so that you don’t have to rush out to get them when you are already in pain. Please let us know if you have any allergies or side effects to any pain medications or anti-inflammatory medications (ie: ibuprofen, motrin, aspirin). Stay ahead of your pain. Take the medicine regularly for the first 48 hours after surgery, then slowly wean yourself off of the pain medicine and substitute with extra-strength Tylenol. Make sure to take your medicines with food. Both Vicodin and Aleve can cause stomach upset, nausea, and vomiting if taken on an empty stomach.

Vicodin and Oxycontin—narcotic pain relievers which alter your perception of pain. These medications can make you feel sleepy therefore you should not drink alcohol, drive, or operate machinery while taking these medications. These medications are only given for a specific period of time after surgery because prolonged use has been associated with addiction. All of these medications can cause nausea, particularly if taken without food. Additionally some patients will notice constipation. To minimize this be sure to drink plenty of fluids, especially fruit juices.

Aleve—otherwise known as naproxyn. This is an oral anti-inflammatory which helps with swelling, stiffness, and pain. It is available over-the-counter at most pharmacies. The appropriate dose is 2 tablets (220 mg per tablet) twice a day with a meal. This medication can cause stomach upset and rarely, ulcers. This drug
Cryotherapy (cold therapy) is just as important in your pain management as the medications. The cold helps to decrease inflammation and therefore swelling and pain in the knee. You should apply the CryoCuff (figure 13) to your knee at all times except when you are up walking or showering. You should keep the CryoCuff on even when you are in the CPM machine, however, you may need to loosen the straps when you begin to get to the higher degrees of flexion. Apply the CryoCuff at night before you go to bed. You do not have to recharge it at night. Simply leave it in place and recharge it in the morning.

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**Activity**

One of the most important goals after your surgery is to limit swelling in your knee. Although the CryoCuff helps to minimize swelling, your activity, being up on your feet, has the most impact on swelling. For the first 4 days after surgery you should minimize the amount of time you are on your feet. **You should only get up to go to the bathroom or to shower.** At all other times you should be laying down with your leg propped up above the level of your chest. Our experience has shown that those patients who are on their feet too much experience more swelling and then struggle more with rehab.
**Crutches**

You will be provided with crutches to use at home. You **may** put as much weight on the operated leg as is comfortable. You may stop using the crutches when you feel that you are able to bear full weight on your leg (usually 1-2 Days).

**Wound Care**

In surgery we apply a sterile dressing sealed with a plastic protective covering and a outer compressive dressing. **The day after surgery** you can remove the **outer compressive dressing. Do not remove the plastic protective covering.** Leave the plastic protective covering on until you return for your first visit after surgery. You **may** shower with this type of dressing (plastic protective covering), however, you **may not** submerge your knee in a bath tub or a hot tub. If your dressing should accidentally come off or become soaked call our office.

**Driving**

You should not drive for at least 4-7 days after surgery. If you had surgery on your right knee it may take up to 1-2 weeks to drive comfortably.

**Exercise**

You may begin upper body exercises (free weights, weight machines) one week after surgery. You should not resume any lower body exercise (except physical therapy) until you have consulted with Dr. Sallay.

**Sexual Activity**

You may resume sexual activity as soon as you are comfortable. Avoid direct pressure on your wound (ie kneeling).
Common Problems

**Pain**

Some degree of pain is anticipated with any surgery. Once you have begun to experience the pain, treat it promptly and stay ahead of it by regularly taking your pain medicine. A common mistake is to wait too long between doses because the pain level seems reasonable. Then the medicine wears off abruptly and you are in significant discomfort. After you take your medicine it takes 20 to 30 minutes to take effect. The medicine works much better to prevent the pain rather than treating the pain once it has occurred. Take it regularly for the first 48-72 hours. Remember some pain is normal! However, your pain should diminish day to day. If you notice worsening pain after several days call the office.

**Nausea**

Nausea and vomiting can occur for several reasons. In the first 24 hours the anesthetic agents you received during surgery can make you nauseous. The anesthesiologist typically administers anti-nausea medications, however, patients can still become nauseated. If you experience nausea at home it may be related to one of your pain medicines. All of the narcotic medicines (ie– Vicodin) can cause nausea particularly if you take them on an empty stomach. **Never take your pain medicine on an empty stomach.** Once you become nauseated you may not be able to take your medicines and it may be necessary to take rectal suppository anti-nausea medicine.

**Itching**

Vicodin and Oxycontin can cause itching over the entire body. In most cases over-the-counter benadryl, 25mg tablets, every 4-6 hours will relieve the symptoms. If you still experience itching after 12-24 hours call the office.
**Change in appetite/bowel habits**

A temporary loss of appetite is observed in some patients. This is typically short lived and improves as you recover. Constipation is commonly associated with a decrease in your activity and your pain medications. The narcotics are especially constipating. You should drink more fluids than usual, especially fruit juices.

**Stiffness**

Most patients notice that their knee feels stiff after surgery, especially when they first get up in the morning. This is normal and should improve rapidly within the first several weeks after surgery.

**Bruising/swelling**

After two or three days you may notice significant bruising in your knee and many times into your calf and foot. This is normal. The blood from the time of surgery slowly leaks out of the deep tissues and takes the path of least resistance under the skin. Because of gravity it ends up going down the leg. Swelling is also expected. Swelling in the knee, leg, and foot is typical. If your swelling becomes more severe decrease your time up walking and get in bed elevating your knee and foot above the level of your heart. The surgical stockings and the CryoCuff also help to minimize swelling.

**Numbness and tingling**

Many patients will experience numbness over the outer half of their knee next to the incision. This is normal. During surgery small sensory nerves in the skin are cut leaving a small patch of skin feeling numb. Numbness in the foot may be due to swelling or an over-tightened CryoCuff. Try to control swelling (see above) and loosen the CryoCuff if you feel it may be too tight.
When to Call the Doctor

If you experience any of the following problems, call our office:

Fever

A low grade fever below 100° F is common. A temperature above 101° F, especially if it persists after the first 48 hours after surgery, should be reported.

Pain

Pain is expected after surgery. Your pain can be aggravated if you fail to take your medicine as directed or if you are overactive with your knee after surgery. If your pain is steadily increasing over consecutive days despite all of the normal pain control measures (see section 7) call our office.

Wound Problems

You should expect some minor bloody drainage to be visible on the dressing. The dressing acts as a wick, therefore, a small amount of blood can make moderate sized spot on the dressing. If your dressing becomes soaked with blood or if you notice any pus drainage call our office.
Important Telephone Numbers and Office Hours

Methodist Sports Medicine Center office hours are from 8:00am to 5:00pm Monday through Friday and 8:00am to 10:00am Saturday. The clinic is closed for official holidays.

General clinic telephone number:

Indianapolis: 317-817-1200
Toll Free: 800-867-9250
FAX number: 317-817-1220

Answering Service: 317-817-1200 - After hours call the answering service and ask for Mike Hinkle or Dr. Sallay

Dr. Sallay’s assistants:

Pam Sterrett (Secretary/Assistant): 317-817-1271
Mike Hinkle (Surgical Assistant) surgery, scheduling, post-operative questions: 317-817-1291

Physical Therapy: 317-817-1200 (North)
Clinic billing department: 866-942-2687
Return to Work/School and Sports

Work

You may return to work/school within 4-7 days if you have a sedentary job. If you have a job that requires manual work (factory, construction, etc) then you may return to work within one week to light duty. Return to full duty manual work will be based on your specific job and your progress in rehabilitation. The range is 4-6 weeks.

Sports

Your doctor and therapist will give you specific guidelines to return to sports. You can typically return to upper body weight training in one week. Lower body weight training and jogging will typically begin at 2-4 weeks. Return to all weight lifting and contact sports usually occurs approximately 1-2 months after surgery. Remember everybody moves through rehabilitation at their own pace. An individual may progress faster or slower than the average times listed above.