Medial Patellar Femoral Ligament (MPFL) Reconstruction with Knee Arthroscopy





WACO ORTHOPEDIC & Sports Medicine CLINIC

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Table of Contents

Introduction 4

Normal Knee 4

Which Patients Should Consider MPFL Reconstruction 7

How is Patellar Instability Treated 8

Causes and Indication for MPFL Reconstruction with Knee Arthroscopy 8

Common Graft Options 9

Preparing Yourself and your Home Before Surgery 10

What to Bring to Surgery Center or Hospital 10

Your Surgery Center or Hospital Stay 11

Morning of Surgery.....11

Anesthesia 12

Knee Arthroscopy 13

MPFL Reconstruction 14

Risks Associated with MPFL Reconstruction and Knee Arthroscopy 15

What to Expect after Surgery 15

Post-Op Knee Exercises 18

Frequently Asked Questions 19

MPFL Reconstruction Physical Therapy Protocol 20

About your Surgeon 23

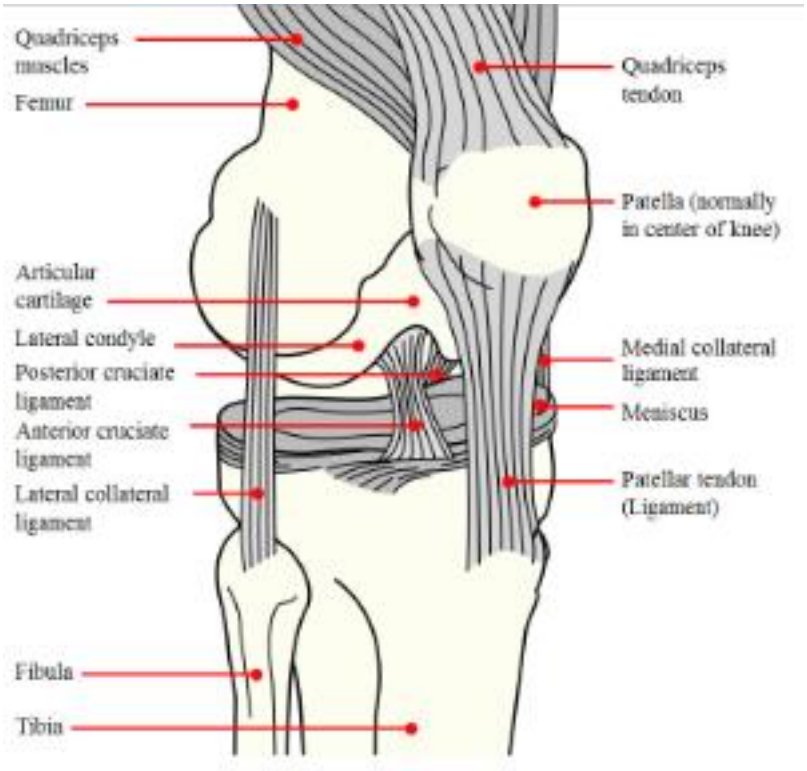
Bibliography 24

Introduction

This booklet will provide a general guide to the common indications for medial patellofemoral ligament reconstruction and knee arthroscopy, what to expect if undergoing the surgery, the significant risks, and a general guide to the expected recovery pathway. This document is not by any means fully comprehensive, and any specific questions should be addressed with your surgeon. Over the last two decades, techniques have developed and improved dramatically, allowing surgeons to improve the treatment of knee injuries.

Normal Knee Joint

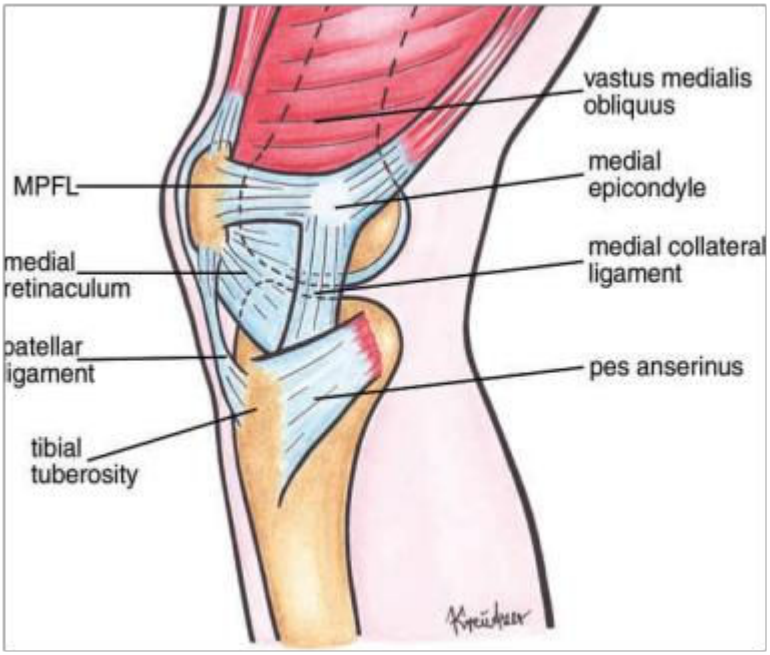
The knee joint acts like a hinge, with the distal femur moving together with the proximal tibia. The knee joint is a natural shock absorber as well as stabilizer and consists of several components.



- Bones: Femur, Tibia, Fibula and patella (kneecap)

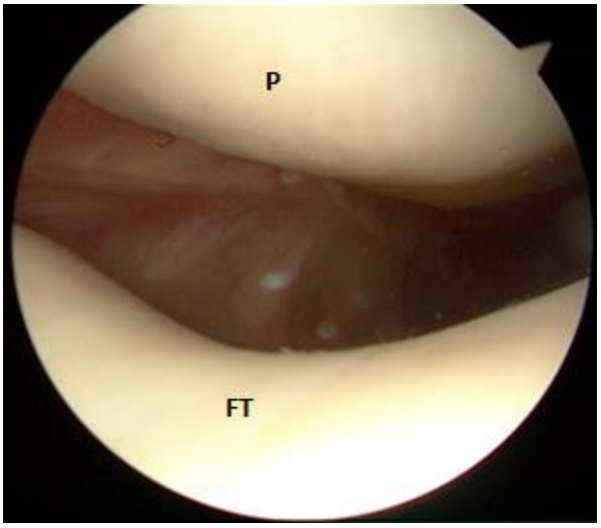
- Supporting structures: articular cartilage on tibia and femur, lateral and medial menisci.
- Associated muscles: Quadriceps, hamstrings, iliotibial band, gastrocnemius, and popliteus.
- Ligaments: lateral collateral (LCL), medial collateral (MCL), anterior cruciate (ACL), and posterior cruciate(PCL), posterolateral corner and **medial patella femoral ligament (MPFL)**

Joint stability is maintained primarily by the main four ligaments including the ACL, PCL, MCL and LCL. The joint capsule as well as the meniscus and other structures provide secondary stability.

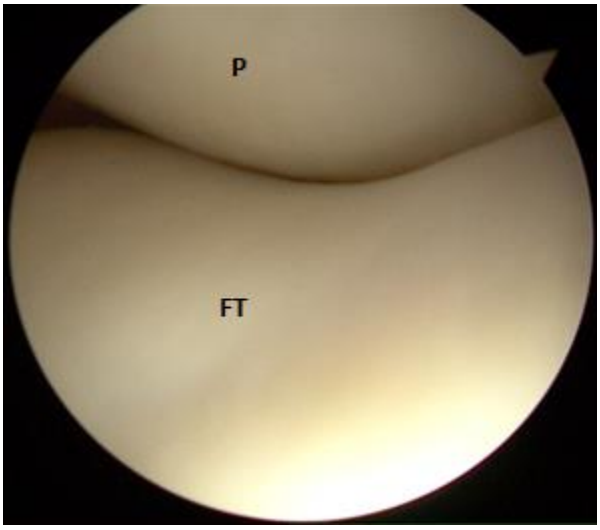


Patellofemoral joint stability is often due to the role of the MPFL as the main static stabilizing force against displacement of the patella. It works in conjuction with the the vastus medialis oblique muscle, the medial retinaculum, lateral retinaculum, and the natural curvature of the femoral trochlea to prevent patellofemoral instability and lateral patellar displacement.

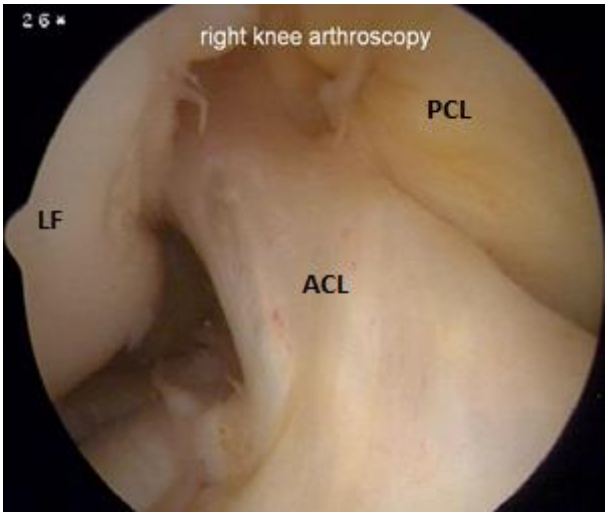
Other causes of patellafemoral joint instability include the tibial tubercle alignment, trochlear dysplasia, connective tissue disorders, and internal rotation of the distal femur.



Normal patella (P) and femoral trochlea (FT) with knee straight and arthroscopic fluid in the knee



Normal alignment of the patella (P) and femoral trochela (FT) with the knee bent 20° and arthroscopic fluid removed



Normal view of ACL and PCL ligaments which stabilize the front and back motion and knee rotation. Lateral femur (LF) is also shown

Which Patients Should Consider MPFL Reconstruction?



Patients with symptoms of a painful condition that have not responded well to nonsurgical treatment and/or have a significant injury to the knee. Your surgeon will help you understand and decide when surgical treatment is needed verses treatment without surgery.

With patellafemoral instability, a variety of issues can arise.

- Pain in the knee joint
- Stiffness and swelling
- Catching of the knee due to cartilage moving irregularly between the joint surfaces
- Knee giving way from instability of the patella joint
- Decreased range of motion

The history of events leading to your current knee state, physical exam, X-rays and MRI can help to confirm the diagnosis of patella instability.

Commonly many patients report a traumatic patella dislocation where the patella dislocates to the outside of the knee. Others may not recall the patella actually moving to the outside of the knee because it may have spontaneously moved back to the middle of the knee prior to them recognizing what happened.

In the clinic, the doctor will check patients for abnormal movement of the patella, range of motion, and muscle strength using carious physical exam tests. The doctor will also look to see if the patient feels any nervousness and/or fear the patella will dislocate when placed in certain positions. An X-ray may show subluxation (bad alignment) of the patella and at times if there is a question of instability then stress xrays may be used. Stress xrays show if your knee is correctly lined up when your leg is moved in different poisitions or if you are weight-bearing (standing). MRI findings often show edema (bone bruise) and cartilage injury or injury to the MPFL, but in some cases the MRI findings could be normal.

How is patellafemoral instability treated?

Treatment for patellar instability will depend on the individual needs of the patient. Nonoperative treatment options may include physical therapy, taping, and bracing. Physical therapy should not only focus on the injured knee but should also include establishing the best possible balance, strength, and function for your lower extremity (legs) and core. The physical therapy should include a patellofemoral (knee joint) program focusing on thigh - vastus medialis oblique (VMO)- strengthening. Taping may be included or use of a patellofemoral brace to supplement the muscle strengthening program. A patellofemoral brace typically helps align the upper and lower leg to train the muscles of the leg to keep the knee properly aligned. The length of nonoperative treatment before considering any surgical intervention is variable, but is usually several months. A complete therapy program can strengthen the patient's body movements and coordination (especially in the knee and hip muscles) and help the knee cap to track and slide in the middle of its groove. If the kneecap continues to dislocate after rehabilitation, then MPFL reconstruction may be indicated.

Causes and Indication for MPFL Reconstruction with Knee Arthroscopy

The main indication for MPFL reconstruction is recurrent patellafemoral (knee cap) joint instability. Most causes and indication for MPFL reconstruction including abnormal bone anatomy (shallow groove or abnormal shaped patella) , affect the normal tracking of the patella and ultimately lead to patellar instability. After an initial patella dislocation, cartilage or bone fragments (loose body) may be caught within your knee joint cavity, causing your patella to be aligned incorrectly. Also it is common for the MPFL to tear when the knee cap dislocates; if it fails to heal the patient may experience continued patella subluxation or dislocation.

A less common cause for patellafemoral instability can result when the tibial turbercule (small bump of bone below the kneecap) is not aligned. If the alignment is abnormal, then a procedure to realign the tibia turbercle is indicated.

*Patients are not generally considered for reconstruction after a single dislocation because research has shown that many of the patients can recover well with nonoperative treatment.

Common Graft Options

To reconstruct the MPFL a tendon graft is placed from the anatomic origin on the knee cap to the anatomic insertion of the femur to provide support and stability to the patella.

The two graft options are allograft and autograft. An *autograft* tissue is tissue taken from your own body and reused to reconstruct the new MPFL. Autograft tissue for the MPFL procedure is typically harvested from a hamstring tendon through a separate incision on the same knee. *Allograft* tissue is tissue taken from a donor cadaver which is used to reconstruct the new MPFL

The advantages of using an allograft tissue is less insicions because the graft is not taken from your body, decreased pain, and shorter operative time. However, there is a slight chance for infection or failure of the graft and it may incorporate slower into your body compared to autograft tissue. Studies have shown when using fresh frozen grafts (harvested in sterile environment) that there is no difference in outcomes when compared to hamstring grafts for final outcome in *ACL* studies.

Choosing a graft will depend on what the surgeon and you decide as the best option.

Preparing Yourself and Your Home Before Surgery

Recovery is a gradual process and will take time after surgery. Plan for your return home before you enter the hospital. Most patients return home the same day of surgery. (Outpatient surgery)

- Ask your spouse, children, or friends if they can assist you with activities of daily living during recovery.
- Before surgery, it maybe helpful to prepare assistance for daily activities that will be affected by surgery.

Anticipate temporary changes to your activity level.

- Plan to leave your home clean and in order.
- To prevent falling, remove throw rugs and excess clutter from traffic paths.
- Place a sturdy armchair in your living room near a table so that magazines, hobby supplies, TV remote, telephone (a cordless is a good idea) or other items you need will be in reach.
- Prepare some meals in advance and freeze them.

What to bring to the surgery center or hospital

- Picture id and insurance card. Leave other valuables at home.
- Do not bring your medications that you usually take. It is important to have a list with the appropriate dosages. This will be requested from you at the time of registration.



- Comfortable, non-skid walking or athletic shoes. Elastic laces are available, eliminating the need to tie your shoes. Athletic shoes are available with hook and loop fasteners. Another option are slip on shoes or slippers.
- Clothes that are soft and loose fitting like sweat pants or loose shorts.

Your Surgery Center or Hospital Stay

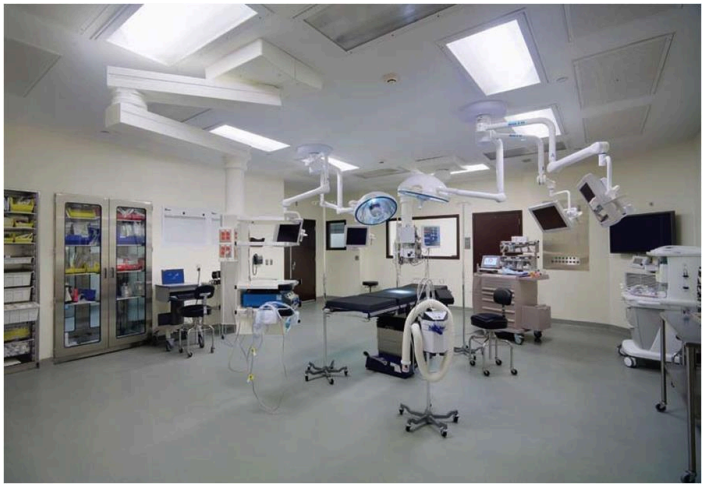
You will be provided a time to come and check into the surgery center or hospital. It is important to follow these instructions:

- You should stop all medications that have a potential to cause bleeding before surgery. The most common medications that fall into this category include aspirin (14 days prior), anti-inflammatories (such as Advil, Motrin, Naprosyn) (7 days prior) and blood thinners such as Plavix and Coumadin. (Disscuss with your PCP or surgeon)
- Supplements: in general, you should discontinue all herbal over-the-counter supplements one week before surgery. You may continue multivitamins and vitamin C, but nothing else. Some supplements affect bleeding tendencies and may cause problems with wound healing.
- Before surgery, do not eat or drink anything after midnight. Your stomach must be empty before you receive the anesthetic. This helps prevent nausea, vomiting and other complications during and after anesthesia.
- Take a shower or bath the evening or morning before surgery. This will help decrease the amount of bacteria on your skin.
- A good nights rest is important before surgery.
- Do not wear makeup the morning of surgery.
- Take only the medications your physician or nurse instructs you to take on the morning of your surgery. (with a small sip of water)

Morning of Surgery

- After admission, the nursing staff will take your temperature, pulse, respiration rate, and blood pressure.
- The anesthesiologist will discuss the types of anesthesia to be used.

- You will be asked to empty your bladder.
- Remove all jewelry (including rings), dentures, and contact lenses.
- Remove your glasses/hearing aid if necessary.



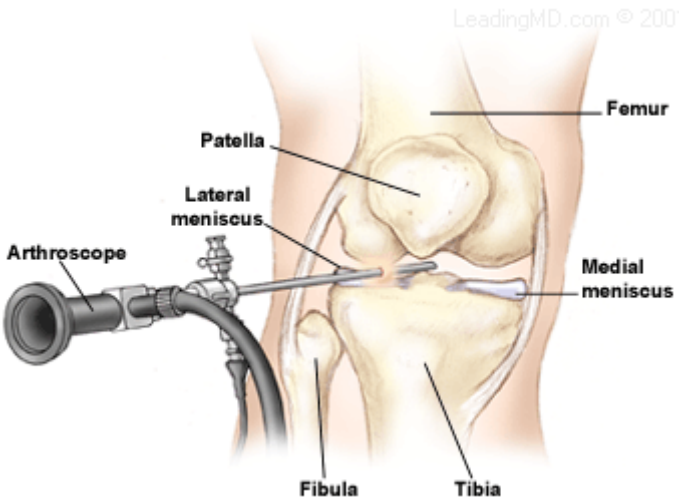
- You will be taken to the operating room on a hospital bed.
- An intravenous (IV) line will be started before surgery.
- The affected knee may be shaved and scrubbed to prepare for surgery.

Anesthesia

The surgery is most commonly performed under general anesthetic with the regional block to numb the nerves to the knee to decrease pain and promote recovery. The anesthesiologist may use an apparatus called an LMA (laryngeal mask airway. The LMA goes in your mouth and allows the anesthesiologist to ventilate and oxygenate (bring air and oxygen into) you for short periods during anesthesia. The LMA can facilitate the use of breathing devices in your windpipe and help control breathing under anesthetic. There may be a sore throat after the surgery which is normal.

Knee Arthroscopy

Knee arthroscopy is a procedure that allows your orthopedic surgeon to inspect your knee from within and then diagnose, and treat problems inside the joint.



Once anesthesia has been provided in the operating room you will be positioned carefully on your back and then the nurse will prepare your leg with a sterile prep. Sterile drapes are then placed around the leg to create a sterile operating field.

During knee arthroscopy, typically two small incisions are made at the front of your knee to allow the surgeon to visualize your knee and work with small instruments to repair and treat your knee problems. A 4mm camera called an arthroscope is placed into the knee joint to begin the operation. The camera displays pictures in high definition onto a television screen. Saline (water balanced for your body) is pumped into the knee joint to allow the surgeon to see clearly and remove debris from the joint.

The first procedure performed is a systematic view looking at all of the important structures of the knee joint to evaluate for any damage. Once the injured tissues have been assessed, the surgeon begins working to repair and/or treat as possible all of the pathology thought to be causing pain. This typically correlates with the preoperative imaging and evaluation. Typically, there is some damage to the patella cartilage which is smoothed and stabilized with a shaver.

Specifically, the tracking of the patella down the femoral groove is also evaluated and the patella typically tracks laterally (to the outside) when there is patella instability.

MPFL Recontruction

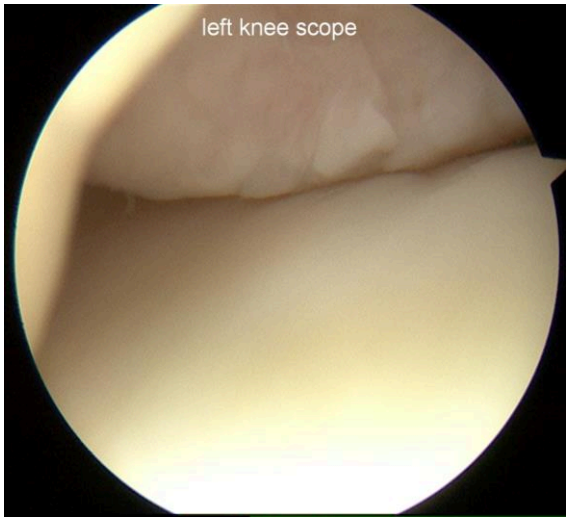
Knee arthroscopy provides the surgeon with a direct visualization and accurate evaluation of the joint. It is combined with open MPFL reconstruction to evaluate the knee joint and address any pathology in the joint like cartilage injuries or meniscus injuries. It also allows the surgeon to visualize the alignment of the patella both before and after the reconstruction.

The surgeon then will prepare your allograft tissue or harvest the autograft tissue from your knee. Following this an incision (~1.5-2 in.) is made over the inside knee and a portable xray machine is used to help locate the anatomical insertion of the MPFL on the femur bone. Once this is located a pin is placed into the femur and overdrilled to create a tunnel or socket for the graft. Next, an incision (~2-2.5 in.) incision is made over the knee cap exposing the bone and opening the natural pathway of the MPFL to the insertion on the femur. Two drill holes are made in the patella to create a tunnel or socket for the graft in the anatomic origin on the knee cap. The graft is then secured in the patella and femur with absorbable or PEEK (medical grade plastic) interference screws.

Once the graft is secured, the patella stability is checked to make sure that it is the correct tightness to stabilize the patella, but not apply excessive pressure to the joint surface. The scope is placed back in the knee joint and is used to access this as well as check the tracking of the knee cap in the femoral groove.



Arthroscopic view of laterally translated or subluxed patella tracking with arthritis prior to MPFL reconstruction



Arthroscopic view of patella after removal of damged cartilage and MPFL reconstruction. Note how the patella now tracks centrally in the groove

Once the procedures have been completed, the incisions are closed beneath the skin with an absorbable suture and further secured with small white band-aids called steri-strips. These are left on until removed and replaced with new ones at your first post-operative appointment.

Risks Associated with MPFL Reconstruction and Knee Arthroscopy

Most patients do not experience complications from MPFL reconstruction and knee arthroscopy. As with any surgery, however, there are some risks. These are usually minor and treatable. Potential risks with any surgery include pain, bleeding, infection, damage to surrounding structures like nerves or blood vessels, failure to heal or cure, need for additional procedures, and any medical or anesthetic complication. Loss of limb or death would be exceedingly rare with outpatient surgery.

Your surgeon will discuss the possible complications with you before your operation and you should ask any questions that you may have.

What to Expect After Surgery

Postoperative
After surgery, you will stay in the recovery room for 1 to 2 hours before being discharged home. Nurses will monitor your responsiveness and provide pain medication, if needed. You will need someone to drive you home and stay with you for at least the first night.

Wound Care: The knee dressing may be removed 72 hours after surgery for showering. The small tapes (steri-strips) covering the incisions should be left in place. Bandaids should be placed over the incisions.

Showering: Showers are acceptable after the dressing has been removed. No use of bathtubs or Jacuzzi. When showering, apply a clear plastic wrap (Saran wrap) to keep the knee dry. This should be applied around the knee until the sutures are removed. You need to keep your incisions dry. After showering, make sure that

you dry the knee area. Your sutures are usually removed or steri strips changed at your first post op appointment.

Bleeding: In some cases, oozing at the point of incision can persist for several hours. If this should persist with the continued use of the compression dressing, contact our office. If the steri-strips covering the incisions are removed, this sometimes does remove the clot covering the wound, which is why we ask that you leave the steri-strips on until your first post op appointment.

Swelling: Swelling is common to experience especially around the knee joint. This will cause stiffness and discomfort. This may last for several weeks after surgery. To minimize the swelling, utilize ice on the knee for 20 minutes every 1-4 hours as desired.

Relief of Pain: You will be prescribed pain medication to be used at home after your surgery. This is a narcotic pain reliever. Take 1-2 tablets every 4-6 hours as needed for pain. It is usually recommended to take the pain medicine every 4 hours for the first 24-48 hours, and then take it as needed. Keep in mind that the medication will cause drowsiness and should not be used with alcohol. Also, taking this medication on an empty stomach may result in nausea. It is common to feel discomfort when lying down to sleep at night, so you may find it beneficial to take the pain pill at bedtime. If unusual side effects occur, please discontinue the medication and contact our office. When additional refills are needed, please contact our office or the pharmacy during regular business hours. Hopefully, in a short period of time you will be able to use tylenol for relief of pain and save the prescription medication for use only when necessary. NSAIDs (Aleve, Ibuprofen) are usually not taken for 3 months after the surgery in order to not slow the new ligament healing.



Diet: After surgery, drink lots of fluids and eat a bland, nutritious meal when you return home from the hospital and or surgery center. Discuss questions and concerns about postoperative diet with your physician or nurse.

Nausea and Vomiting: Although unusual, both can be experienced after anesthesia in surgery. If you have a tendency for this, please discuss this with the anesthesiologist. Otherwise, it is usually alleviated with a clear liquid diet.

Drowsiness: After anesthesia, drowsiness may persist for up to 48 hours.

Activities: Crutches have been supplied for your comfort, as well as a brace to limit range of motion while walking. Partial weight bearing is permitted with crutches after surgery. (unless told otherwise) The exercise in which you were instructed (SEE BELOW) should be performed at your tolerance and comfort, starting the day after your surgery. This will include gentle knee range of motion (bending and straightening the leg) and tightening your quadriceps muscle (making the leg straight and contracting the thigh muscle) Do not engage in sports or heavy work until your physician gives you permission to do so.

Common complaints after surgery: At times, patients complain of sensation of liquid within the knee joint; this is the reabsorbing of fluid from the surgery. Other complaints can be occasional clicking with movement; this is the readjustment of your muscles and control of the knee joint, which is usually alleviated with your ice and exercise program.

Signs of Infection:
With any surgery it is important to be aware of signs of infection, which can include: increased sweling, unusual looking incision such as increased redness or smell, drainage from the knee, and fever. It is normal to have a slight temperature after surgery, but above 101 degrees; you may need to contact our office immediately.

Physical therapy: Patient's are typically scheduled for their physical therapy to begin 2-3 days after their surgery. If you do not have an appointment scheduled for after the surgery, please call our office to make sure a post op appointment was made for you.

Postoperative office visit: Patient's are typically given a post op appointment at the time their surgery is scheduled for 5 to 10 days after surgery. If you do not have an appointment scheduled for after the surgery, please call our office at 254-752-9638 to make sure a post op appointment was made for you. Please make the scheduler aware that this is your first post op appointment. At this

appointment, we will change the steri-strips, and examine your knee. Typically, you will be seen again approximately 6 weeks after the surgery.

Post-Op Knee Exercises

Exercise and movement are important following surgery. Muscle contractions through exercise release nitric oxide, which decreases inflammation, aid wound healing and help prevent stiffness. You should begin these exercises when you return home from your surgery the same day. You should begin in a gentle manner and then progress under the guidance of your therapist.

Exercises: Begin the day after surgery. You may remove ther brace to perform the exercises. Repeat each exercise 10-30 times and repeat each set 3-4 times daily.

1. **Ankle Pumps**:
Point your foot down like pushing on the gas pedal of a car and then move your foot back to the starting position.(begin day of surgery)

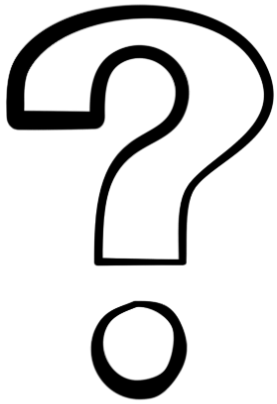
2. **Quad Sets:**
Either lying down or sitting straighten your leg tightening up your quadriceps muscle making it as straight as possible and hold for 3-5 seconds then relax.

3. **Straight Leg Raises:**
Either lying down or sitting bend the unaffected leg and keep the leg that has been operated on straight. Tighten thigh muscle of the straight leg and slowly raise the leg keeping it perfectly straight. Hold the leg in the air for 3-5 seconds. Relax the leg and repeat.



4. **Range of Motion:**
Gently work on regaining the motion of your knee by working to fully straighten your knee and then fully bend the knee.

Frequently Asked Questions



How long is my surgery?
About 2-3 hrs.

How long will I be kept at the facility?
Patients can typically leave to go home within 1-3 hours following surgery.

How much weight can I place on my foot?
As much as tolerated, use crutches and the brace locked straight to protect your knee from fatigue and limping with ambulation (walking). (Unless told otherwise)

Is it normal to have swelling or popping following the surgery?
It is normal to have swelling in the knee the first week after surgery as this is from the surgical fluid. Swelling after this may be indicative that the knee is not fully healed yet and is becoming irritated from excessive use. Occasional popping can occur while the knee is healing from readjustment of the muscles while the strength returns to the knee.

Is it normal to have numbness to my knee after surgery?
It is normal to have some numbness around the incision made from performing the MPFL surgery. This may be located around the incision or to the outside of the incision as nerves typically too small to be seen are cut with the incision.

When can I drive?
Usually, you can drive within a few days once you are off of the narcotic pain medicine, and can ambulate well. You should feel comfortable moving the leg quickly to hit the brakes in case of an emergency situation.

What else should I do to protect my knee as it heals?
Avoid over exerting the knee in the first few weeks. This can cause swelling and irritation to the lining of the knee joint and prolong your recovery. If you get swelling in the knee then you need to decrease your activity level.

MPFL RECONSTRUCTION PHYSICAL THERAPY PROTOCOL

*This is a guide for rehabilitation after MPFL reconstruction. Some of the terminology used will be specific to physical therapy professionals.

Day of Surgery to POD 3-5:

Goals:

- Begin controlling any post operative swelling
- Begin ROM program and reactivation of the quadriceps

Treatment:

- WBAT in the hinged knee brace locked in extension
- Keep dressing intact and dry
- Initiate cold therapy
- Elevate the extremity
- Maintain full extension (may place pillow under heel to help)
- Initiate extension exercises: Heel props with quad sets
- Initiate PROM of the knee

Phase I: (0-6 weeks)

Goals:

- Alleviate acute pain and swelling
- Increase ROM 0-120° (emphasize full extension)
- Increase hamstring and quadriceps strength
- Promote comfortable ambulation
- WBAT with brace and crutches
- Maintain cardiovascular conditioning

Plan: (0-2 weeks)

- Initiate HEP
- Keep brace locked in extension until patient has good quad control (usually 4 weeks), then unlock for ambulation
- Gait training to progress to normalized gait with assistive device(s)
- PROM positioning for knee extension
- ROM, Progress from PROM to A/A ROM to AROM
- Heel/wall slides w/o brace
- ½ revolution non-resisted bike for knee flexion – progress to full revolution when patient reaches 110°
- Hamstring and quadriceps co-contraction
- 4-Quad (hip flexion, abduction, adduction, extension) Modalities for pain and edema control
- EMS for muscle reeducation as needed.

Plan: (2-6 weeks)

- Continue above

- Advance gait training, may discontinue assistive devices once patient has a normalized gait, continue brace

- Soft tissue/scar mobilization (week 3-4)
- Prone/standing knee flexion
- Proprioceptive training/balance – BAPS, trampoline
- Weight shifting in standing, 0-30° ROM mini-squats
- Theraband ankle exercises – progress to standing as WB dictates
- Begin Stairmaster at 4 weeks
- General conditioning
- Aquatic therapy (week 3-4)(when incisions healed): pool walking/jogging, deep water running (No whip kick)

Phase II (6-12 weeks)

Goals:

- Decrease swelling and prevent atrophy
- Increase to full ROM
- Increase quadriceps and hamstring strength
- Increase hip strength
- Stimulate collagen healing
- Independent ambulation without crutches and brace
- Continue general conditioning/ CORE

Plan:

- Continue phase I exercises
- Continue ROM activities as objective findings warrant
- Standing ½ squat
- Joint and soft tissue mobilization as needed
- Isotonic hamstring NK table
- SAQ progressed to LAQ
- Leg Press
- Continue closed chain, balance, proprioceptive activities, eccentric training
- Continue EMS as needed for muscle re-ed and edema
- Step-ups (controlled – forward and side)
- Stairmaster or Elliptical
- General Conditioning

Phase III (12-16 weeks)

Goals:

- Continue all goals from Phase II

Plan:

- Continue phase II exercises and progress as tolerated
- Step-Up - side and down
- Increase proprioceptive training (sport cord, body blade, plyoballs, etc.)
- Initiate jogging/running program
- Treadmill as tolerated

*Isokinetic training full ROM at 180 and 240. Patient should demonstrate 80% of uninvolved side at least to initiate sport specific training. If

isokinetic testing is unavailable, utilize the single limb triple hop for distance and single limb hop compared to uninvolved side. Utilize 80% as measure

Phase IV (16-24 weeks)

Goals:

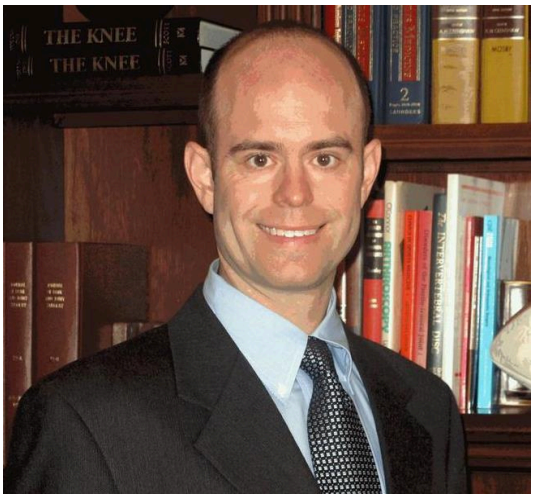
- Development of strength, power and endurance
- Begin to prepare for return to sports/recreational activity
- Begin sport specific training

Plan:

- Continue Phase III exercises and conditioning activities
- Continue strength training
- Initiate agility/cutting/pivoting drills
- Sport specific training and drills
- Isokinetic evaluation(if available)

Note: As with all protocols, the designated time frames and exercises are for guidance only and should not limit the patient's progress or make them worse. Please call for any questions.

Chad Stephen Conner, MD



Dr. Conner specializes in sports medicine and arthroscopic and reconstructive surgery of the shoulder, hip, knee, and ankle. He is board certified in orthopedic surgery by the American Board of Orthopaedic Surgery with a subspecialty certification in orthopaedic sports medicine.

Dr. Conner grew up in Dallas, Texas and attended Lake Highlands High School. Beginning at age 5 he practiced gymnastics and went on to compete for the University of Minnesota gymnastics team in Minneapolis, Minnesota.

He attended The University of Texas Medical Branch for his medical school training and subsequent orthopedic surgery residency training. Following this, Dr. Conner completed a fellowship at the world renowned Southern California Orthopedic Institute. There he specialized in sports medicine, arthroscopy, and reconstructive surgery of the shoulder, hip, knee, and ankle. He helped care for athletes from the high school level to the professional level. His training also included specialization in shoulder replacement surgery and reverse total shoulder replacement.

Dr. Conner currently practices at the Waco Orthopedic & Sports Medicine Clinic in Waco, Texas and is a team physician for a local high school team. He is a member of the Arthroscopy Association of North America, the American Orthopedic Society for Sports Medicine, and the American Academy of Orthopaedic Surgeons.

He has done extensive research on treatment of massive rotator cuff tears, ACL reconstruction, hip arthroscopy and ankle arthroscopy. He is also involved in teaching hip arthroscopy as an associate master instructor at the Arthroscopy Learning Center in Chicago, IL. With Baylor University, he gives lectures for student classes and is involved in the Baylor Health Science Studies internship program mentoring students interested in orthopedic surgery.

Dr. Conner also volunteers at a community outreach organization called Mission Waco, which strives to provide Christian-based holistic, relationship-based programs that empower the poor and marginalized and was named Business of the Year by Mission Waco for 2013. He leads a monthly orthopedic and rehabilitation clinic at Mission Waco's free health clinic and has partnered with the hospitals to provide surgical care as well.

Outside of the office, Dr. Conner enjoys his wife and children, church, work outs, wakeboarding, and the outdoors.



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Arthroscopic Pictures: Dr. Chad S. Conner

Contributions: Dr. Stephen J Snyder, Dr. Carlos A. Guanche, and Dr. Mark Getelman; Southern California Orthopedic Institute, www.scoi.com

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