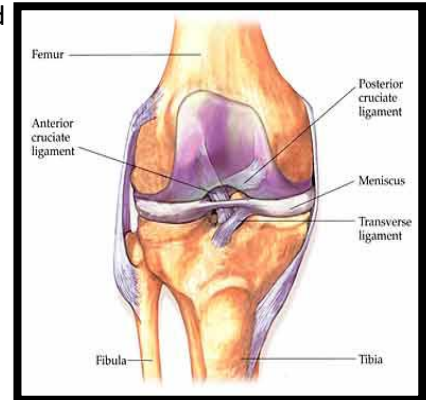


Knee Arthroscopy (Meniscectomy)

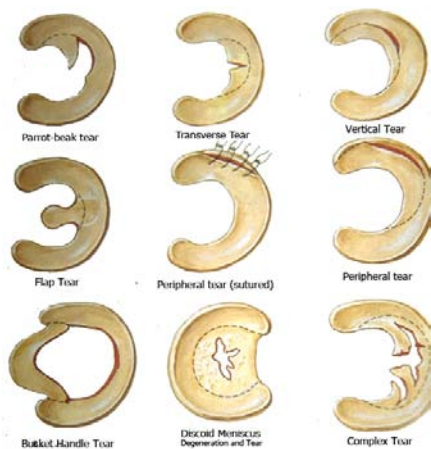
Anatomy and Biomechanics

The knee is a hinge joint at the connection point between the femur and tibia bones. It is held together by several important ligaments. The knee is also cushioned during weight bearing by two cartilaginous discs, called the medial (inside) and lateral (outside) menisci. These menisci provide shock absorption for the knee during weight bearing. Because they are soft and rubbery these structures are vulnerable to tearing when the knee is forcefully twisted during activity. This is known as a traumatic tear. The meniscus can also break down and tear as a result of repetitive loading stress over time. This type of tear is called a degenerative tear.



Both traumatic and degenerative tears can create pain, swelling and locking in the knee. Meniscal tears come in many shapes and sizes. There are many different categories or names to describe the specific location or type of tear in the meniscus. Small tears can make it difficult to pivot, run or move laterally. The larger a tear gets though, the more restrictive it is. Large tears can create a great deal of pain in the knee making it difficult to walk normally. They occasionally even create a locking in the joint that will not allow the knee to straighten or bend fully.

Treatment Options



No matter what type of meniscal tear is present your physician will work with you to determine what the best course of treatment will be. Small, degenerative meniscal tears are often treated conservatively with rest, anti-inflammatory measures, activity modification and Physical Therapy. Many times when the inflammation is resolved and the patient is agreeable to reducing the load bearing activity affecting the joint, surgery can be avoided. If a non-surgical approach is taken the patient must understand that it is imperative that he or she maintain good strength in his or her leg and avoid sports or activities that require pivoting or cutting. If the tear is large or if conservative measures fail to alleviate the associated pain and joint dysfunction than the surgeon may elect to remove the tear surgically with the use of an arthroscope.

Surgery

When the meniscal tear is removed the surgeon uses an arthroscopic technique. Two small incisions are made in the front part of the knee below the knee cap. Through one incision a camera is inserted so that the surgeon can see the inside of the knee joint on a monitor. The other incision is used to place a tool into the joint that will clip and remove the torn piece of cartilage. While the camera is inside the joint the surgeon uses this opportunity to examine the rest of the knee to make sure it is otherwise healthy.



Recovery/Time off Work

It is very important that the patient knows that the recovery process after surgery requires that he or she be an active participant, performing daily exercises to ensure there is proper return of range of motion and strength to the knee. There is a large amount of variability in the time it takes to fully recover from this procedure. It is usually estimated that it will take at least 4-6 weeks for the patient to feel as though he or she has completely returned to a pre-injury level of activity. Some cases may take as long as 2-3 months to make a full recovery. People with desk jobs should plan to take at least a few days off from work. Manual laborers will likely be out of work for at least 4-6 weeks. **Recovery is different in each case.** Your individual time table for return to activities and work will be discussed by your surgeon during post operative office visits.

Post Operative Visits

Your first post-op visit to the doctor's office will be approximately 7-10 days after the operation. At this visit your stitches will be removed and you will review the surgery with the surgeon or his/her staff. At this time you may be asked to make an appointment to begin Physical Therapy. Your surgeon will also discuss a plan for subsequent post operative office visits at this time, and will have you schedule them accordingly.

At Home

You should replace your post-op dressing 1 day after the operation. The dressing is no longer necessary after two days as long as the incisions are dry. Do not remove the strips of tape (steri-strips) that are across your incision. Allow them to fall off on their own or to be removed at your doctor's office visit. You may shower after 2 days, but use a water-tight dressing until your sutures are removed. Bathing without getting the knee wet or sponge baths are a good alternative.

Medication

Your surgeon will prescribe pain medicine for you after the operation. Please call the doctor's office if you have any questions regarding medication.

Ice

You must use ice on your knee after the operation for management of pain and swelling. Ice should be applied 3-5 times a day for 10-20 minutes at a time until pain and swelling are minimized. Always maintain one layer between ice and the skin. Putting a pillow case over your ice pack works well for this.

Crutches

After meniscectomy surgery you will need to use crutches to help you walk for a several days. Starting right after surgery you may put as much weight as you can tolerate on your operated leg while using both crutches for support. After a few days if you can maintain proper heel toe gait you should switch to using one crutch while walking. This crutch should be used on the opposite side of the operated knee. After a few more days you may walk without crutches, but it is very important that you walk with a normal gait and not limp. If you can not walk normally continue using your crutch or crutches until you see your doctor or physical therapist.

Rehabilitation

****The following is an outlined progression for rehab. Time tables are approximate. Advancement from phase to phase, as well as specific exercises performed, should be based on each individual patient's case and sound clinical judgment on the part of the rehab professional. ****

Phase 1 (0-2 Weeks)

Goals

Control Pain and Swelling
Protect Healing Tissue
Restore Joint Range of Motion
Establish Normal Gait Pattern
Establish Hip and Knee Muscle Activation, Especially Quadriceps

Precautions

WBAT with Crutches until normal gait pattern is established
Limit time spent on feet standing or walking
No restrictions in ROM

Recommended Exercises

Range of Motion

Heel Slides 2 Sets of 20 Repetitions
Assisted Knee Flexion/Extension in Sitting 2 Sets of 20 Repetitions
Heel Prop (passive extension) or Prone Hang 5 Minutes
Belt Stretch (Calf/Hamstring) Hold 30 Seconds 3-5 Repetitions
Cycle (minimal resistance) 10-15 Minutes Daily

Strength

Quad Sets 2-3 Sets of 20 Repetitions
SLR *(no Lag)* 2-3 Sets of 10-20 Repetitions
Hip Abd/Add/Extension (against gravity) 2-3 Sets of 10-20 Repetitions
Standing or Prone Hamstring Curls 2-3 Sets of 10-20 Repetitions
T-Band Ankle Pumps 2-3 Sets of 20-25 Repetitions

Guidelines

Use exercise bike daily if possible for 10-15 minutes. Perform Range of Motion exercises 3-5 times a day. Perform Strengthening exercises 1 time a day.

Phase 2 (2-6 Weeks)

Goals

Continued Protection of Healing Tissue
Continue to Improve ROM
Continue to Stress Proper Gait Mechanics
Transition to Weight Bearing/Closed Chain Strengthening
Improve Lower Extremity Flexibility

Precautions

Continue to limit swelling in joint by limiting weight bearing activity
Must continue to stress proper gait
No running or sports until cleared by physician

Recommended Exercises

Range of Motion

Continue ROM exercises from Phase 1 until normal ROM is achieved
Cycle with increased resistance
Add Lower Extremity stretching (Hamstring, Quadriceps, Calf, Glutes, Adductors, ITB, etc)

Cardio

Cycle with progressive resistance
Elliptical at 4 Weeks
Swimming at 4 Weeks

Strengthening

Continue 4 way SLR program (add ankle weight as needed)
Standing T-band TKE
Mini Squat and/or Wall Slide
Heel Raises
Gym Equipment at 2-4 weeks post op if pain free (Leg Press, Ham Curl, Multi-Hip)
Step Up Progressions at 4-6 Weeks post op if pain free (Forward Step Ups) *Forward Step Downs are not recommended due to increased patella femoral load*

Guidelines

Perform all ROM and Strengthening exercises (except gym equipment) once a day. Do 2-3 sets of 15-20 repetitions. Cycle daily if possible.

Phase 3 (6-12 Weeks)

Goals

Avoid excessive joint stress and joint pain
Continue to maximize return of ROM and flexibility
Continue closed chain strength and proprioception

Precautions

Must avoid excess joint stress and keep closed chain exercises pain free
Begin lateral movement and return to activity progression per physician clearance
Begin return to running progression per physician clearance

Recommended Exercises

Range of Motion and Flexibility

Continue Lower Extremity Stretching (Hamstring, Quadriceps, Calf, Glutes, Adductors, ITB, etc)

Cardio

Cycle with progressive resistance

Elliptical

Swimming

May begin return to running progression at 6 weeks post op (outlined by P.T. or Physician)

Strengthening

Continue Progression of 4 way SLR with Ankle Weights

Continue Gym Equipment with progressive loads

Squats to 90°

Progressive Single Leg Strengthening (Squat and Lunge Variations)

Step Up Progressions (Forward and Lateral Step Ups) *Forward Step Downs are not recommended due to increased patella femoral load*

Static Forward/Backward Lunge

Proprioception

Static and Dynamic Balance on Bosu/Wobble Board/Foam/Etc

Star Drill (single leg stance with reach)

Dynamic Progressions

May Begin Plyometric/Jumping Progression (see page 6) at 6 Weeks if approved by P.T. and Physician

May Begin Speed/Agility Progression (see page 7) at 6 Weeks if approved by P.T. and Physician

Guidelines

Perform stretching program daily. Hold stretches for 30 seconds and perform 2-3 repetitions of each.

Cardio program is recommended 3-5 times a week for 20-45 minutes

Perform strengthening/proprioception exercises 3 times a week. Do 2-3 sets of 15-20 Reps.

Perform plyometric/jumping/agility exercises 2 times a week

Perform return to sport activities as directed by P.T. or Doctor

Jumping/Plyometric Progression

Simple Double Limb (6 Weeks Post Op) *Limit 60 foot contacts per workout

- Double Leg Hops (forward and backward over line)
- Box Jump (6-8 inches max)

Focus on sticking each landing with good form in frontal and sagittal planes. Stress a soft landing with good eccentric control.

Complex Double Limb (7 Weeks Post Op) *Limit 90 foot contacts per workout

- Double Leg Jump (for distance)
- Double Leg Jump (for height)
- Double Leg Jump (with 90° or 180° turn)
- Double Leg Lateral Jump/Lateral Box Jump (side to side)
- Depth Jump (6-8 inches max)

Focus on sticking each landing with good form in frontal and sagittal planes. Stress a soft landing with good eccentric control.

- Combination Jumps (begin at 18-20 weeks post op)
 - Repetitive Double Leg Jumps (distance, height, lateral, turns)
 - Jump for Distance into Jump for Height
 - Box Jump to Depth Jump
 - Depth Jump to Jump for Distance/Height

String jumps together. Focus on quickly moving from jump to jump.

Single Limb (8 Weeks Post Op) *Limit 100-120 foot contacts per workout

- Heiden Hop
- Bounding
- Single Leg Jumps (distance, height, lateral, 90°/180° turn)
- Single Leg Box Jumps (6-8 inches max)
- Single Leg Depth Jumps (6-8 inches max)

Focus on sticking each landing with good form in frontal and sagittal planes. Stress a soft landing with good eccentric control.

- Combination Jumps (Single Leg)
 - Repetitive Single Leg Jumps (distance, height, lateral, 90°/180° turn)
 - Jump for Distance into Jump for Height
 - Box Jump to Depth Jump
 - Depth Jump to Jump for Distance/Height

String jumps together. Focus on quickly moving from jump to jump.

Speed/Agility Progression

Work with P.T. to establish proper warm-up and cool down before and after each agility workout session.

Forward/Backward Sprinting (6 Weeks)

Sprint 50-100 yards at $\frac{1}{2}$ speed 10 reps.

Sprint 50-100 yards at $\frac{3}{4}$ speed 10 reps

Backpedal 50 yards at $\frac{1}{2}$ speed 5 reps.

Basic Change of Direction (7 Weeks)

*Begin each workout with sprinting and backpedaling 50 yards (2 reps at $\frac{1}{2}$ speed, 5 reps at $\frac{3}{4}$ speed)

T drill 3 reps at $\frac{1}{2}$ speed

Forward/backpedal shuttle 5/10/20 yard 3 reps at $\frac{1}{2}$ speed

Box drill with shuffling or cutting 3 reps at $\frac{1}{2}$ speed

Advanced Drills (8 Weeks and Beyond)

*Begin each workout with sprinting and backpedaling 50 yards (3 reps at $\frac{1}{2}$ speed, 2 reps at $\frac{3}{4}$ speed and 5 reps at full speed)

Work with P.T. to develop sport specific drills. Perform drills from previous weeks with use of ball, stick, etc. Perform drills seen in typical sports practice with supervision.

| Time | Weight Bearing and Gait | Focus | Range of Motion | Recommended Exercises | Precautions |
|------------------------------|--|--|---|--|---|
| Phase 1 0-2 Weeks | *WBAT *D/C crutches When Gait Pattern in Normal | *Wound Healing *Protect Joint *Establish Early ROM *Establish Good Quadriceps Contraction and proper gait mechanics | *Emphasize 0° Extension *Goal to Achieve 120-135° of Flexion *May Have Specific ROM Instructions if Meniscal Repair | ROM Heel Slides, Seated Assisted Knee Flexion, heel prop, prone hang, cycle Strengthening Quad Sets, SLR (no lag), Hip Abd/Add/Extension, Standing or Prone Hamstring Curl, T-band Ankle Pump | *Minimize Joint Effusion and Edema *Monitor for Gait Abnormalities |
| Phase 2 2-6 Weeks | *Continue to Stress Proper Gait | *Normalize Gait Mechanics *Progressive Weight Bearing Strengthening | *Continue to Stress Normal ROM if Still Limited *Begin Lower Extremity Stretching Program | ROM Continue Phase 1 Exercises until normal ROM is achieved. Start Lower Extremity Stretching Program all Muscle Groups. Cycle with increased Resistance Cardio Cycle with Progressive Resistance Elliptical at 4 Weeks Swimming at 4 Weeks Strengthening Progress Open Chain SLR/Hip Program with Ankle Weights, Gym Equipment (Leg Press, Ham Curl, Etc) Squats to 90°, Begin Transition to Single Leg Strengthening, Step Ups, Static Forward/Backward Lunge, Etc Proprioception Static and Dynamic Balance with Bosu/Foam/Etc | *Must Continue to Stress Proper Gait *Avoid Joint Stress and Swelling *Emphasize No Joint Pain with Exercise Progressions |
| Phase 3 6-12 Weeks | *Straight Ahead Jogging per MD Approval *Lateral Movement per MD Approval *Sport Specific Training Progression per MD Approval | *Continue Preparation for Return to Sport and Physical Activity *Progressive Strengthening and Jumping *Begin Progressive Agility Drills | *Continue Lower Extremity Stretching Program Daily | ROM/Stretching Continue Lower Extremity Stretching Program all Muscle Groups Daily Cardio Cycle with Progressive Resistance Elliptical Swimming Begin Return to Run Program at 6 Weeks Strengthening Continue SLR Program and Gym Equipment, Progressive Single Leg Strengthening, Dynamic Lunge, Lateral Lunge, Step Up Progressions Proprioception Static and Dynamic Balance with Bosu/Foam/Etc Dynamic Progressions Begin Plyometric/Jumping and Agility Progressions Progress to Sport Specific Drills | *Must have MD and P.T. Clearance for Return Return to Jogging, Dynamic Progressions and Return to Sport. |

*Reviewed by Michael Geary, MD