



Pinellas Medical Associates

Orthopedic Surgery and Neurology

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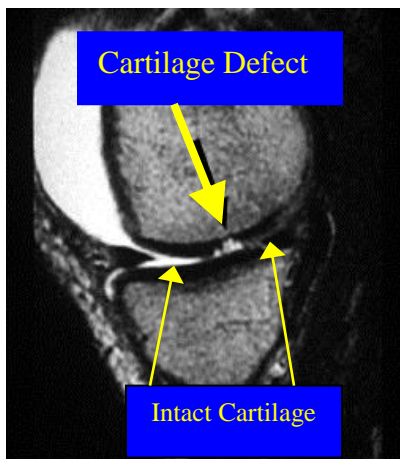
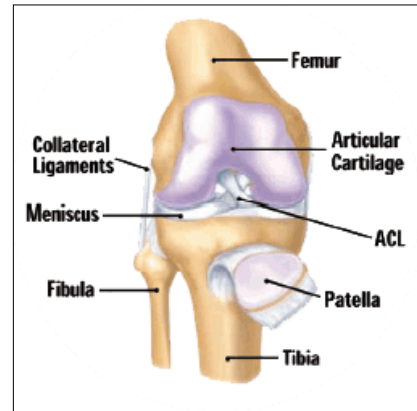
Patient Information Sheet:

Cartilage Defect

Articular cartilage is a highly organized avascular tissue located on the ends of bones. In combination with synovial joint fluid, cartilage provides a frictionless joint environment. Articular cartilage is so smooth that you can easily compare its surface to a fresh ice skating rink. While cartilage defects may have a genetic influence, the most common mechanism of injury is trauma. An example of this is a fall directly onto the knee or a violent twisting/pivoting movement. This traumatic experience may cause a defect within the cartilage surface. This is similar to the change that ice undergoes after skaters have left their mark. The rink is no longer as smooth as it used to be.

Unfortunately, cartilage is avascular, meaning that it lacks blood flow and subsequently, the ability to heal. Often cartilage injuries are associated with other injuries such as a torn anterior cruciate ligament or patella dislocation.

Diagnosis of cartilage defects is made by history and physical examination. Patients will often report knee joint swelling and pain. The pain may worsen with prolonged walking and activity. Joint clicking or locking may demonstrate a loose cartilage fragment within the knee joint. Radiological assessment consists of X-rays and MRI. Knee arthroscopy or the use of a small camera within the knee joint may be required to assess for the cartilage defect.



Conservative management of chondral defects consists of weight loss, physical therapy, activity modification and hyaluronic acid injections (series of 3 knee injections). The goal of conservative management is to decrease the pain associated with the cartilage defect. The above treatments will not replace the lost articular cartilage. If conservative options fail to relieve pain or enable a return to the patient's chosen level of activity surgery is the next option.

Surgical options are influenced by numerous factors including: age, weight, size and location of cartilage defect and leg alignment. Like any surgery there are risks to the below procedures including: knee stiffness, pain, nerve damage and infection

- **Cartilage Abrasion:** Shaving of the cartilage surface in order to smooth the cartilage defect is an easy option for a partial cartilage defect. Arthroscopic equipment is utilized

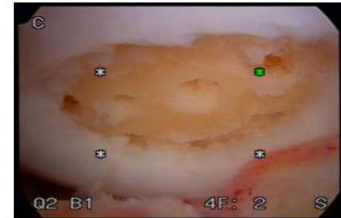
to remove the frayed or shredded cartilage surface. Surgical Time: 1 Hour

- **Microfracture:** This arthroscopic technique is utilized for full thickness cartilage defects and encourages the body to actually replace or fill the defect with cartilage tissue. Using small arthroscopic equipment, the base of the cartilage defect is debrided, exposing the bony undersurface. Unlike cartilage, bone is very vascular and is able to heal. The bone is picked which encourages bone marrow to form a clot in the defect which becomes scar tissue or fibrous cartilage. While this type of cartilage is very durable and may last for years, it lacks the strength and integrity of articular cartilage. Surgical Time: 1 Hour

Microfracture: Holes made in bone to transport healing substances to cartilage surface.



- **Osteochondral Autologus Transfer “OATS”:** This technique involves taking a cartilage and bone graft from a non-weightbearing portion of the joint and moving it to the painful damaged region. This surgery is done open with a 5-8 cm incision over the knee joint. Surgical Time: 2 Hours

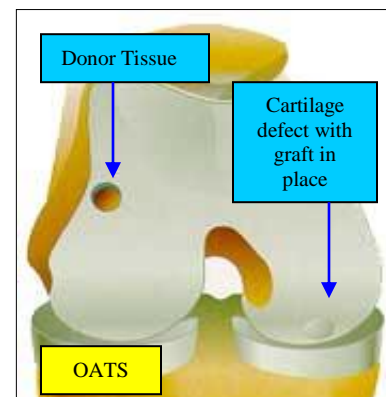


- **Autologus Chondrocyte Implantation “ACI”:** This technique involves harvesting normal cartilage from the knee, multiplying these cells in a lab and reimplanting the grown cartilage into the painful defect. This procedure involves one arthroscopic procedure to retrieve cartilage and a second open surgery 6 weeks later to implant cartilage cells into the painful defect.
- **Allograft transplant:** Rarely utilized but an option for massive defects

Pre-surgery:

Before surgery, patients are instructed to continue to be as active as the knee permits.

- Anti-inflammatories such as ibuprofen or aspirin must be stopped 5 days prior to surgery. Utilize ice and elevation to control pain and swelling during this period
- On the night before surgery, do not eat after midnight (no chewing gum or lozenges).
- On the morning of the surgery you may have your daily pills with a sip of water.
- Your surgical time will be confirmed the day before the surgery by the Surgery Center or Hospital. The original time may be adjusted based on patient needs and equipment availability.
- Patients should bring their MRI and X-rays to the surgery



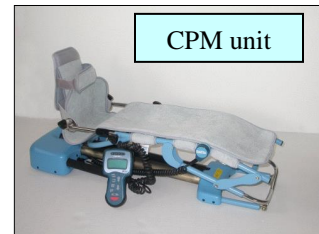
Surgery:

Your nurse will bring you into the pre-op area where you will have an IV placed and meet with your anesthesiologist. General anesthesia is utilized to assure a comfortable surgery. This means that you will be “asleep” and completely unaware of the surgery until you wake up in the recovery area. Most patients will have a small tube placed in their windpipe, formal intubation may not be required.

Post-Surgery:

After the surgery is completed, you will awaken in the operating room and be moved to the recovery area. After surgery, most patients generally recover smoothly and have minimal pain due to local pain medication that is used at the completion of the surgery.

- A pain medication prescription will be provided prior to discharge. You may take the prescribed medication as directed. You should expect to experience minimal to moderate knee discomfort for several days and even weeks following the surgery. Patients often only need prescription narcotics for a few days following the surgery and then switch to over-the-counter medications such as Tylenol or Ibuprofen.
- Ice bags and elevation should be utilized to decrease swelling and pain. Ice should be applied to the shoulder up to three times a day for 20 minutes until swelling subsides.
- A Continuous Passive Motion Unit or CPM will be provided both in the hospital and at home (pending insurance coverage or out of pocket expense). Utilize the CPM unit for a total of 6 hours a day. This may be broken down into three 2-hour sessions.
- You should be comfortable walking independently with crutches before leaving the hospital or surgery center.
- If the bandage is draining, reinforce it with additional dressings for the first 48 hours. After 48 hours, remove the bandage and place band aids over the incision sites. Showering is acceptable at this time. Do not submerge or scrub the knee.
- Take one 325 mg (full strength) aspirin daily for 14 days (unless otherwise instructed) to prevent blood clots.
- **Follow up with Pinellas Medical Associates 727-528-6100 within 2 weeks from the date of surgery for your first post-op appointment.**
- Eat a regular diet as tolerated and please drink plenty of fluids.
- You may drive once you establish control of you operative extremity. If your right knee was operated on, this may take approximately 3-5 days to achieve.
- Call office for temperature >102 degrees, excessive swelling, pain or redness around incisions.
- Plan at least 2-3 days away from work or school. Utilize this time to decrease swelling and participate in your home exercise program. You may be able to resume work once the pain and swelling resolves (this varies based on job activity).



The above are should be interpreted as guidelines. One year for return to sports for all procedures upon approval by Pinellas Medical Associates.

Each surgical procedure has a specific rehabilitation regimen and weight bearing status:

- Chondroplasty: Weight bearing as tolerated
- OATS: Touch down weightbearing for 3 weeks (20% of body weight on operative leg)
- Microfracture: Touch down weight bearing for 6 weeks
- ACI: Touch down weight bearing for 4-6 weeks

Post-Op Microfracture and OATS Instructions

- Ambulation:
 - Microfracture: Utilize crutches for 6 weeks maintaining only touch down weight bearing (20% of body weight through the operative leg)
 - OATS: Utilize crutches for 3 weeks maintaining only touch down weight bearing (20% of body weight through the operative leg)
- Continuous Passive Motion Unit “CPM”: Utilize this machine for a total of 6 hours a day. This may be broken down into three 2-hour sessions
- Participate in Home Exercise Program found on following page:

Post-Op Rehabilitation Protocol

PHASE 1 (WEEKS 0-4):

Goals: Minimize effusion, CPM 0-110, Independent with HEP

Treatment plan:

- 1) Swelling Control with ice and compression wrap
- 2) Patella Mobilization
- 3) Progress towards full range of motion
- 4) Initiate quadriceps and hamstring muscle activation and general leg control
 - Quad setting, SLR, heel slides, isometric hamstring/quadriceps contraction
 - Ankle pumps
- 5) Electrical stimulation to quadriceps muscle

PHASE 2 (Weeks 4-9):

Goals: Progress quadriceps/hamstring strengthening, independent mobility

Treatment plan:

- 1) 6 weeks post-op: Independent ambulation full weightbearing
- 2) Continue with swelling control
- 3) Progress strengthening
- 4) Balance and Proprioception training

Return to sports and running activities around 4-6 months as determined by Pinellas Medical Associates.

Post-Op Autologous Chondrocyte Implantation “ACI”

- Continuous Passive Motion Unit “CPM”: Utilize this machine for a total of 6 hours a day. This may be broken down to 3, 2 hour sessions

PHASE 1 (WEEKS 0-6):

Goals: Protect healing tissue from load and shear forces, decrease pain and effusion, restore full knee extension and flexion, regain quad control

Ambulation: Locked in extension during weight bearing activities and when sleeping, only 20 lbs of weight through operative leg until week 3, then partial weight bearing

Treatment plan:

- 1) Swelling Control with ice and compression wrap
- 2) Patella Mobilization
- 3) Progress towards full range of motion
- 4) Initiate quadriceps and hamstring muscle activation and general leg control
 - Quad setting, SLR, heel slides, isometric hamstring/quadriceps contraction
 - Ankle pumps, multiangle isometrics, bike
- 5) Electrical stimulation to quadriceps muscle

PHASE 2 (WEEKS 6-12):

Goals: Progress quadriceps/hamstring strengthening, independent mobility, discontinue brace

Ambulation: Progress to full weight bearing by weeks 8-9

Treatment plan:

- 1) 6 weeks post-op: Independent ambulation full weightbearing
- 2) Continue with swelling control
- 3) Progress strengthening: mini-squats, CKC, step-ups
- 4) Balance and Proprioception training

PHASE 3 (WEEKS 12-26):

Goals: Progress quadriceps/hamstring strengthening; improved endurance, full non-painful ROM, strength within 80-90% of contralateral side

Treatment plan:

- 1) 6 weeks post-op: Independent ambulation full weightbearing
- 2) Continue with swelling control
- 3) Progress strengthening: lunges, wall squats, leg press, hip abduction/adduction
- 4) Balance and Proprioception training

Return to sports and running activities as determined by Pinellas Medical Associates

Post-Op Exercise Program until formal physical therapy is started

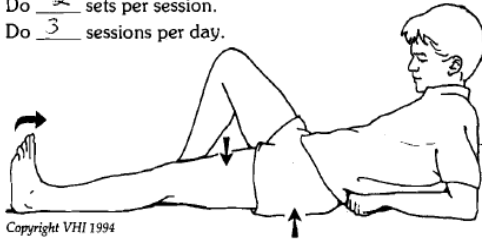
HIP / KNEE - 64 Antiemboi Isometric

Extending toes toward knee, tense the muscles of the front of the thigh and simultaneously squeeze buttocks. Keep leg and buttock flat to the floor. Hold ____ seconds.

Repeat 10 times per set.

Do 2 sets per session.

Do 3 sessions per day.



ANKLE/FOOT - 18 Range of Motion: Plantar/Dorsiflexion

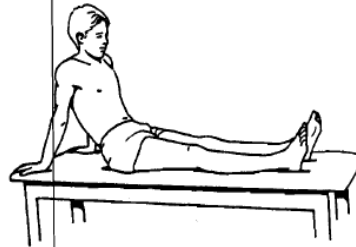


Relax leg. Gently bend and straighten ankle. Move through full range of motion. Avoid pain.

Repeat 10 repetitions/set. Do 2 sets/session.

Do 3 sessions/day.

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Tighten muscles on top of thigh by pushing knees down into floor or table.

Hold 5 seconds. Repeat 10 times.

Do 3 sessions per day.

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Straight Leg with Bent Knee

Lie on back with opposite leg bent. Keep involved knee slightly bent at knee and raise leg 4-6". Hold ____ seconds.

Repeat 10 times per set.

Do 2 sets per session.

Do 3 sessions per day.

