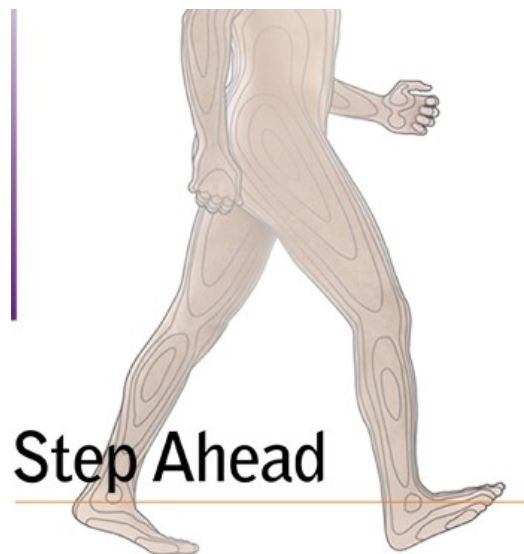


KNEE MICO-FRACTURE

Patient Information & Exercise Folder

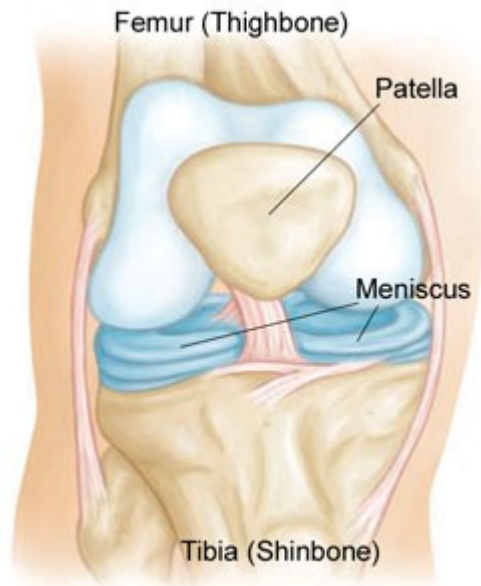
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Your knee is the largest joint in your body and one of the most complex. Because it is made up of so many parts, many different things can go wrong.

Anatomy



Normal knee anatomy

Three bones meet to form your knee joint: your thighbone (femur), shinbone (tibia), and kneecap (patella). These bones have white glistening articular cartilage.

Microfracture

What is a microfracture?

Microfracture is a surgical option used in the treatment of areas of damaged cartilage. When a patient has a small area of damaged cartilage (not widespread [knee arthritis](#)), microfracture may be performed in an attempt to stimulate new cartilage growth.

How does microfracture work?

A microfracture creates small holes in the bone. The surface layer of bone, called the subchondral bone, is hard and lacks good blood flow. By penetrating this hard layer, a microfracture allows the deeper, more vascular bone to access the surface layer. This deeper bone has more blood supply, and the cells can then get to the surface layer and stimulate cartilage growth.

Who is a good candidate for microfracture?

- Patients with limited areas of cartilage damage
- Patients who are active and cannot participate in their sport or activity because of symptoms
- Patients with pain or swelling caused by the damaged area of cartilage

Who is not a good candidate for microfracture?

- Patients with widespread arthritis of the joint

- Patients who are inactive
- Patients unwilling to participate in [rehabilitation following microfracture](#)

Does microfracture work well?

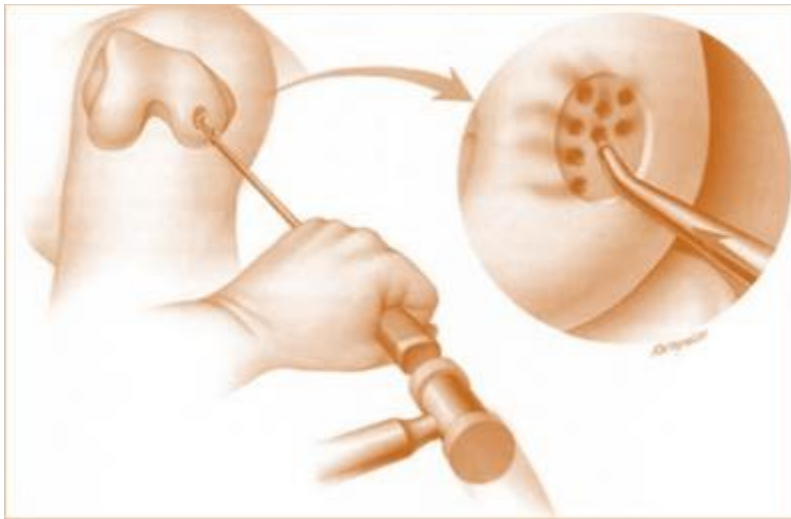
Yes, but there is more to it! Microfracture can be an excellent procedure, providing substantial pain relief when done in the right patient.

One of the concerns with microfracture is that it does not stimulate the growth of normal joint cartilage. There are many types of cartilage, and one of these types (hyaline cartilage) is normally found on the joint surface. Microfracture stimulates the growth of a type of cartilage commonly found in scar tissue (fibrocartilage). Unlike hyaline cartilage, fibrocartilage does not have the same strength and resiliency of cartilage normally found in a joint. Therefore, there is a chance that the cartilage stimulated by a microfracture procedure will not stand up over time.

How is a microfracture procedure performed?

A microfracture is performed as part of an [arthroscopic](#) knee surgery.

First, the area undergoing microfracture is prepared by removing any loose or damaged cartilage. Ideally, the area undergoing microfracture will be less than about 2 centimeters in diameter and have good, healthy surrounding cartilage. Then, a small, sharp pick (awl) is used to create the small microfracture holes in the bone. The number of microfracture holes created depends on the size of the area being treated. Most patients with a 1 to 2-centimeter area of damage require 5 to 15 small holes in the bone.



The real key to treatment is appropriate [rehabilitation following the microfracture surgery](#). Rehabilitation must protect the area treated by microfracture as well as maintain the strength and motion of the knee joint.

Microfracture Rehabilitation Protocol

MICRO-FRACTURE: FEMUR AND TIBIAL PLATEAU

Hinge knee Brace

Patients should have CPM immediately after surgery from 30°-70° and then gradually increased over the next few hours. Pain is the guiding factor limiting ROM.

The primary goal is to regain full passive knee motion as soon as possible.

The patients should remain Touch weight bearing for 6-8 weeks.

Cold therapy can be used to help reduce pain and inflammation.

All exercises should be relatively comfortable to perform especially when moving on to weight bearing exercises.

Use symptoms of pain, swelling and giving way as indicators of when exercises can be progressed to next stage.

Exercises include

- Passive flexion and extension exercises including knee flexion in prone.
- Active range of movement exercises if comfortable.
- Static quads.
- Straight leg raise and in prone.
- Stretches for quads, hamstrings and achilles tendon.
- Mini squats with 80% of weight on unoperated leg.
- Single leg stationary cycling (well leg only).
- Hip extension / Add / Abd. Add resistance as tolerated.

Limited strength training can be done in this time period.

0 - 2 weeks

- **Spinning on stationary bike 70-80 RPM.**
- **Hydrotherapy – kick board.**

6-8 weeks

- **Progress to partial weight bearing between 6-8 weeks.**
 - **Thera band exercises can be started including squats and seated leg press.**
 - **Open chain quads / hamstrings with resistance as tolerated.**
- You might be given a brace to use**

8 weeks

- **Full weight bearing if comfortable.**
- **Gradually increase difficulty of all weight bearing exercises.**

4-6 months

- **Earliest return to sports that involve pivoting, cutting and jumping.**

PATELLA: MICROFRACTURE TECHNIQUE

Hinge knee brace: The range of motion restriction is decided in theatre and strict attention should be paid to the operation notes for guidance. The brace stops the defect coming into contact with the patella facet as the repair cells are forming.

Patients should have CPM immediately after surgery from 30°-70° (or decided by the surgeon) and then gradually increased over the next few hours. Pain is the guiding factor limiting ROM.

The primary goal is to regain full passive knee motion as soon as possible.

Weight bearing is as tolerated but limited to the angles of flexion where the lesion is not compressed using a brace.

Cold Therapy can be used to help reduce pain and inflammation.

Exercises in hospital

- **Passive flexion and extension exercises.**
- **Static quads - if have full extension.**
- **SLR if no lag.**
- **Patella mobilisation.**

Use symptoms of pain, swelling and giving way as indicators of when exercises can be progressed to next stage.

0-4 weeks

- **Active quads and hamstrings at 0°-30°.**
- **Hip adduction/abduction adding resistance as tolerated.**
- **Stationary bike – no resistance (brace can be removed for this).**
- **SLR in prone.**
- **VMO (non-weight bearing).**
- **Stretches for quads, hamstrings and calf.**

4-6 weeks

- **Active movement limited to range that does not engage the lesion and is comfortable.**
- **Isometric, co-contraction quads/hamstrings at varying angles that do not engage the lesion.**
- **CKC quads/hamstrings 0°-45°.**
- **The knee brace is gradually opened.**

6 weeks+

- **No limit to active range of movement.**
- **Progress all above exercises, add resistance as tolerated.**
- **Proprioception.**
- **The knee brace can be discarded.**
- **Gradually wean off elbow crutches when tolerated.**

12 weeks

- **Jogging can be commenced if appropriate for patient and comfortable to perform.**

16 weeks

- **Free or machine weights can be commenced.**