



Knee Arthroscopic Surgery

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What is arthroscopic surgery?
During arthroscopic surgery, the doctor uses a thin operating telescope, called an arthroscope, to look into the joint. The arthroscope is less than a 1/4-inch in diameter. The joint is filled with saltwater and the arthroscope is inserted through a 1/4-inch puncture in the joint. Other small instruments are inserted into the joint and surgical procedures are carried out through one or two additional small punctures

Anesthesia

A general anesthetic (putting the patient to sleep) is usually used. A spinal epidural can be used in some cases.

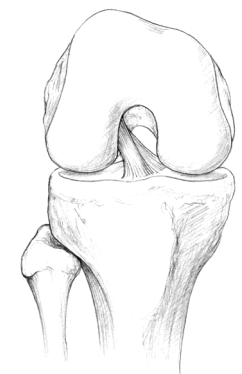
Risks and Complications

Arthroscopic surgery is exceedingly safe. Nonetheless, it is not risk free. Complications occur in less than 1% of cases. These complications include: Infection, permanent nerve injury, stiffness requiring manipulation under anesthesia or necessitating the performance of a subsequent arthroscopic procedure, deep vein thrombosis, pulmonary embolism and a nerve problem called reflex sympathetic dystrophy. It is possible that symptoms may not be relieved, or if they are relieved, they may recur. This list is not exhaustive.

Structure of the Knee

The knee joint is the space between the upper leg bone, the femur, and the lower leg bone, the tibia. The ends of both of these bones are covered with a kind of cartilage called hyaline cartilage. The cartilage is very smooth and slippery which allows the joint to move smoothly. Between these bones are a lateral and medial meniscus. A meniscus is a edge shaped cushion, made of fibrocartilage, which helps the joint move smoothly and prevents the bones from rubbing on each other. Through the middle of the joint runs the ACL which keeps the knee stable and keeps the joint from shifting. In front of all of this is the patella, the knee cap. The patella protects the knee and helps it function more efficiently.

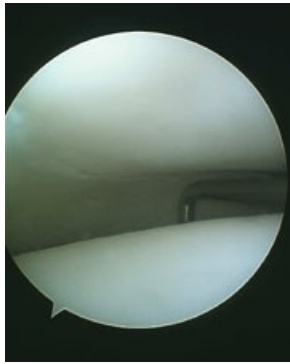
Damage to the meniscus or cartilage can cause these surfaces to become rough and uneven, resulting in pain with movement and decreased ability to move the joint.



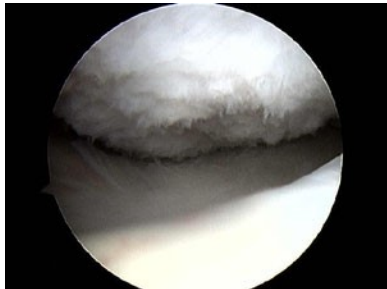
Common Arthroscopic Knee Procedures

Chondroplasty

Chondroplasty is performed when the cartilage is worn and frayed. A motorized shaver is used to remove the damaged tissue and smooth down the surface of the cartilage. Even though the cartilage cannot be made completely smooth, smoothing out the rough areas can reduce pain and reduce function.



This is a photo of healthy cartilage. Note the smooth white surfaces.



The picture above shows damaged car-

tilage. Note how the texture is rough and uneven. Chondroplasty can be performed to make this surface smoother.

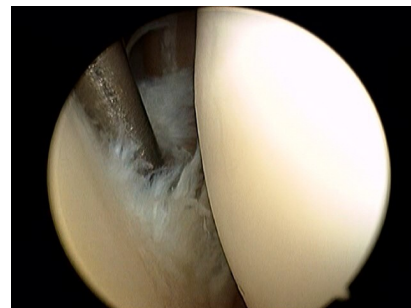
Meniscectomy

The menisci in the knee have a curved, wedge shape. When a meniscus is damaged, it can tear or fold over itself. These tears usually occur along the thinner edges of the meniscus. When this happens, there is no way to repair the damage. Instead, the damaged sections need to be removed to prevent the torn pieces from interfering with the movement of the joint. Removal of the damaged parts is called a meniscectomy. Most of the time, the damaged part of the meniscus can be removed with no long term effects. Occasionally, when a large part of the meniscus is removed the decreased cushioning will cause arthritis to develop prematurely.

Meniscal Repair

If the damage to a meniscus is along the thicker part, it may be suitable to repair. This type of damage is much rarer, but when it occurs, the meniscus can be repaired by sewing the damaged areas together and allowing them to heal.

This image shows a torn meniscus. Note the frayed and torn edges.



Removal of Loose Body/Debridement

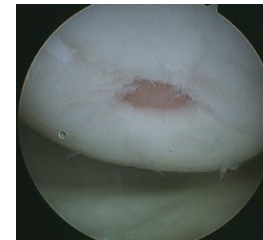
Sometimes when there is damage in the knee, small pieces of damaged cartilage and other tissue can break loose and move around in the knee. These loose pieces can be floating free, or they can get wedged under the meniscus or in other places where they impair movement and cause pain. Finding and removing these pieces of debris can help the knee function better.

Microfracture

When damage to the cartilage gets more severe, holes can form that expose the bone. This damage can occur slowly over time, or quickly from an accident. When the damage goes all the way to the bone, then microfracture can be done. A pick-like instrument or drilling with pins is used to put small holes in the bone. This allows the bone marrow cells to move out into the damaged area and begin to change into new cartilage. Eventually, these cells grow enough to fill the damaged area. This new cartilage is not exactly the same as the original cartilage. It is not as strong or durable. Most patients show improvements that last from 2 to 10 years.

Hole in cartilage

Microfracture holes



Crystals

Sometimes, crystals are found in the knee joint. These crystals attach themselves to tissue in the knee including the cartilage and menisci. The crystals make the surfaces rough, causing pain and limiting motion. The crystals are caused by 2 diseases, gout and psuedogout. Treatment is determined by discovering what type of crystals are present. Uric acid crystals are caused by gout and calcium pyrophosphate crystals are caused by pseudogout. Samples of the crystals will be removed during surgery and sent to the lab to determine their composition. Additionally, the doctor will carefully scrape off and remove the crystals from the tissue throughout the knee.

Microfracture

Some patients have a patella that is naturally tilted. When it tilts too far, it may rub on the adjoining bone, eventually wearing down the cartilage and causing pain and swelling. In some cases, this problem can be relieved by cutting the lateral retinaculum, the connective tissue on the outside of the knee.

X-ray of a tilted patella.

