

MANAGING KNEE PAIN



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THE FUTURE OF ORTHOPEDICS IS HAPPENING NOW.

The future of knee pain treatment is here today at Beaumont. Our orthopedic knee surgeons care for patients with a full range of disabling knee joint disorders. From regrowing your own cartilage to the latest knee replacement techniques, we are pioneering innovative, less invasive solutions to relieve your knee pain.

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YOUR KNEE PAIN

Chronic knee pain interrupts millions of lives just like yours every day. It slows us down as we climb stairs and makes us think twice before standing up.

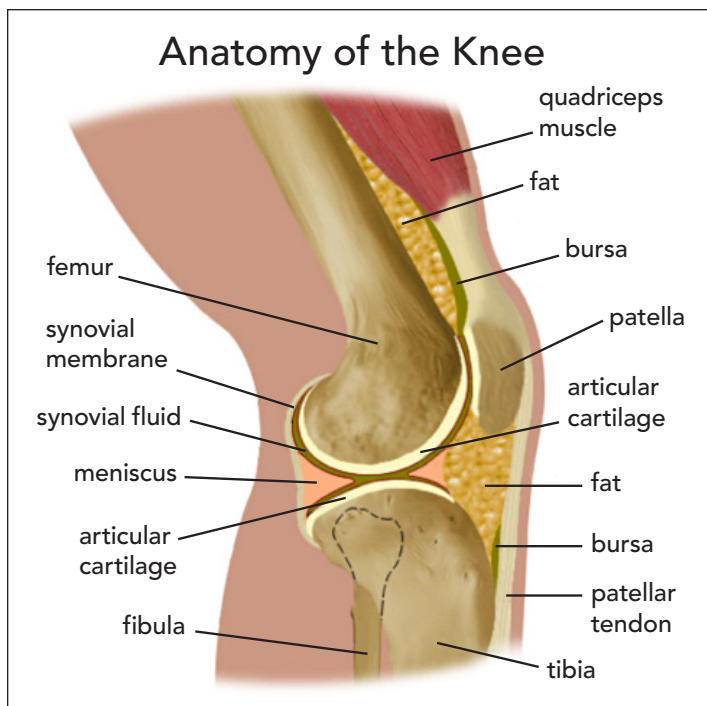
This guide contains valuable information to help you understand your knee pain, including possible causes and how your physician might diagnose the problem. It also explains treatment options like advanced minimally invasive surgery designed for less pain, lower risk and faster recovery.

BRIEF ANATOMY OF THE KNEE

The knee is a vulnerable joint that bears a great deal of stress from everyday activities, such as lifting and kneeling, and from high-impact activities, such as jogging and aerobics.

Essentially, the knee is two long leg bones (the tibia and femur) held together by muscles, ligaments and tendons. Each bone end is covered with a layer of cartilage that absorbs shock and protects the knee. The knee also includes the patella, or kneecap.

There are two groups of muscles involved in the knee. The quadriceps (located on the front of the thighs) straighten the legs. The hamstring muscles (located on the back of the thighs) bend the leg at the knee.



Tendons are tough cords of tissue that connect muscles to bones. Ligaments are elastic bands of tissue that connect bone to bone. Some ligaments on the knee provide stability and protection of the joints, while other ligaments limit forward and backward movement of the tibia (shin bone).

CAUSES OF KNEE PAIN

Many knee problems are a result of the aging process, which produces continual wear and stress on the knee joint. An example of this is arthritis.

The most common condition that results in the need for knee replacement surgery is **osteoarthritis**, a degenerative process in which the cartilage in the joint gradually wears away. The condition most often affects middle-aged and older people. Osteoarthritis may be caused by excess stress on the joint from repeated injury or being overweight.

Rheumatoid arthritis can also affect the knees by causing the joint to become inflamed and by destroying the knee cartilage. Rheumatoid arthritis often affects people at an earlier age than osteoarthritis.

Other knee problems may result from an injury or a sudden movement that strains the knee. These include:

- **Sprained or strained knee ligaments and/or muscles.** A sprained or strained knee ligament or muscle is usually caused by a blow to the knee or a sudden twist of the knee. Symptoms often include pain, swelling and difficulty walking.
- **Torn cartilage.** Trauma to the knee can tear the menisci (pads of connective tissue that act as shock absorbers and also enhance stability). Cartilage tears can often occur with sprains. Treatment may involve wearing a brace during an activity to protect the knee from further injury. Surgery may be needed to repair the tear.

- **Tendonitis.** Inflammation of the tendons may result from overuse of a tendon during certain activities such as running, jumping or cycling. Tendonitis of the patellar tendon is called jumper's knee. This often occurs with sports, such as basketball, where the force of hitting the ground after a jump strains the tendon.

DIAGNOSING KNEE PROBLEMS

In addition to a taking a complete medical history and performing a physical evaluation, your doctor may also use the following to diagnose knee problems:

- **X-ray.** An X-ray is a diagnostic test that uses invisible electromagnetic energy beams to produce images of internal tissues, bones and organs onto film.
- **Magnetic resonance imaging (MRI).** This is a diagnostic procedure that uses a combination of large magnets, radiofrequencies and a computer to produce detailed images of organs and structures within the body. An MRI can often determine damage or disease in a surrounding ligament or muscle.
- **Computed tomography scan (also called a CT or CAT scan).** A CT scan is a diagnostic imaging procedure that uses a combination of X-rays and computer technology to produce horizontal, or axial, images (often called slices) of the body. A CT scan shows detailed images of any part of the body, including the bones, muscles, fat and organs. CT scans are more detailed than general X-rays.

- **Radionuclide bone scan.** This nuclear imaging technique uses a very small amount of radioactive material that is injected into the bloodstream and detected by a scanner. The test shows blood flow to the bone and cell activity within the bone.

TREATING KNEE PAIN

Consult your primary care physician or an orthopedic specialist if the pain continues, even with over-the-counter medication and exercise.

Specific treatment for knee problems will be determined by your doctor based on:

- your age, overall health and medical history
- extent of the disease, injury or condition
- your tolerance for specific medications, procedures or therapies
- expectations for the course of the disease, injury or condition
- your opinion or preference

Initial treatment methods often include assistive walking devices, anti-inflammatory medications, injections and bracing. If these do not provide relief, and X-rays show destruction of the joint, your orthopedic specialist may recommend total joint replacement for the knee. The decision to replace the painful knee with an artificial one is a collaborative decision between you and your doctor.

KNEE ARTHROSCOPY

This is a minimally invasive treatment procedure in which a small, lighted optic tube (arthroscope) is inserted into the joint through a small incision. Images of the inside of the joint are projected onto a screen, which allows the surgeon to use special tools to correct any issues. Arthroscopy may be used to treat and evaluate any degenerative and/or arthritic changes in the joint, as well as ligament and meniscal tears. It can also be used to detect bone diseases and tumors or to determine the cause of bone pain and inflammation.



KNEE REPLACEMENT SURGERY

When a knee is severely damaged by disease or injury, an artificial knee replacement may be considered. During knee replacement surgery, joint surfaces are substituted or replaced by a prosthesis (artificial knee). The most common age for knee replacement patients is between 60 and 80 years old, though the procedure can be appropriate to younger people as well in some cases.

Although each procedure varies, generally, surgery to replace a knee usually lasts about two hours. After the damaged bone and cartilage of the knee is removed, the orthopedic surgeon will place the new prosthesis (artificial knee) in its place.

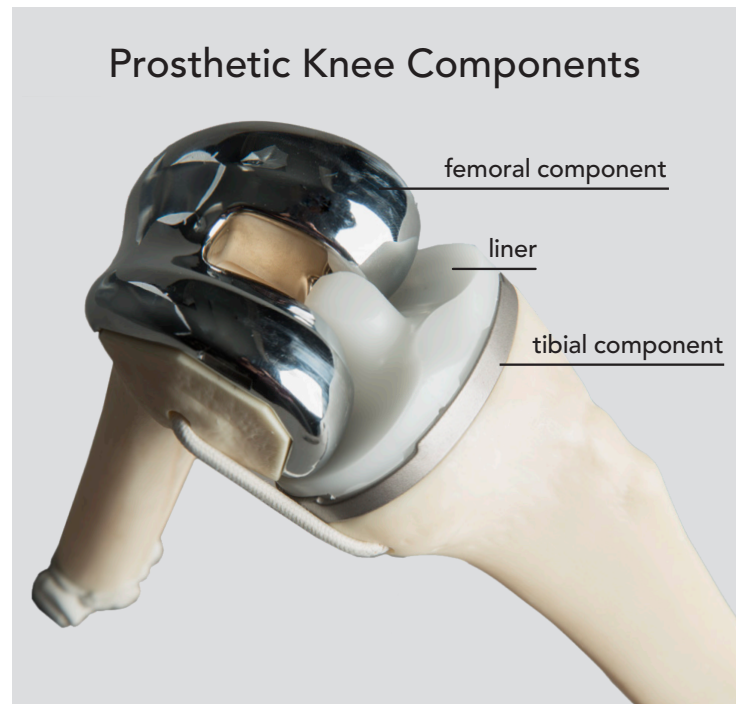
The prosthesis is comprised of the following three components:

- **tibial component** (to replace the top of the tibia, or shin bone)
- **femoral component** (to replace the two femoral/thighbone condyles and the patella groove)
- **patellar component** (to replace the bottom surface of the kneecap that rubs against the thighbone)

While undergoing surgery, you may be under general anesthesia or awake with spinal or epidural anesthesia.

Today, the parts of most knee implants are made from alloys of cobalt/chromium (vitallium) or titanium.

A piece of specially designed plastic lines the kneecap and the top of the tibia component. This plastic acts as your new cartilage. A knee



replacement is most often held in place by special bone cement that attaches the metal to the bone.

Your knee replacement surgeon will make a vertical incision on your knee. The length of the incision may vary. With minimally invasive techniques, it may be four to six inches long and closed with temporary metal staples.

One size does not fit all during total knee replacement surgery. Knee implants come in different sizes to accommodate various body sizes, types and needs. Several manufacturers make joint implants. Your knee replacement surgeon will select the implant that best fits your needs. The weight of the prosthesis will be more than the weight of the bone that is removed. The weight will vary according to your size, but in general may weigh one to two pounds. You will not notice the weight in your knee.

AFTER SURGERY

Knee replacement surgeries usually require an in-hospital stay of a few days. Even while in the hospital, you usually start physical therapy exercises to begin regaining range of motion in the knee. Physical therapy will continue at home. Pain medication also will be administered to keep you comfortable. The incision will have stitches or staples that will be removed after a few weeks.

Thanks to the advanced surgical techniques and fast track recovery programs available at Beaumont, many patients are back to a normal level of activity four to six weeks after surgery, much sooner than the months required for recovery from more traditional approaches.



MINIMALLY INVASIVE KNEE REPLACEMENT SURGERY

Beaumont's comprehensive joint replacement program incorporates the latest implants and surgical approaches to reduce trauma to the muscles and tendons. The program also incorporates smaller incisions, improved anesthetic and pain management techniques, and early rehabilitation.

The truth is that all surgery is invasive to the body and will carry some risks. Minimally invasive surgery can reduce but not eliminate normal physiologic and psychological responses to surgery.

NEVER SETTLE FOR ORDINARY ORTHOPEDICS.

More people in Michigan prefer Beaumont for orthopedic surgery than any other health system. Our program features less invasive, more innovative procedures and advanced technologies. And we offer a level of expertise that can only come from experience.



IF YOU'D LIKE TO TALK TO A BEAUMONT DOCTOR ABOUT YOUR KNEE PAIN, PLEASE VISIT beaumont.org/doctors OR CALL 800-633-7377.

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