Treating Osteoarthritis through Knee Replacement

Create Motion.®
This patient education brochure is presented courtesy of Wright.

Patient results may vary. Please consult your physician to determine if these products are right for you.

For more information about Wright’s products or prescribing information, including warnings and contraindications, please consult the product labeling summary provided on the inside back cover of this brochure, or visit www.wmt.com.

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Introduction
Osteoarthritis affects nearly 350 million people worldwide. Those with osteoarthritis of the knee may experience pain, which may keep them from performing and enjoying simple daily activities. In order to treat this condition, your doctor may recommend you have knee surgery with a knee implant manufactured by Wright Medical Technology, Inc. Facing surgery can be daunting. However, Wright has decades of experience producing revolutionary products which may improve the lives of patients such as yourself, struggling with pain and unable to live the active lifestyle you once did.

What Is Osteoarthritis?
Osteoarthritis is a common condition in which the cartilage that normally cushions the bones of a joint gradually begins to wear, causing the bones to rub together. Osteoarthritis of the knee is common because most of the body’s weight is carried by the knee joint. This can make the knee wear out more quickly than other joints. Symptoms include pain, swelling, and changes in appearance and function of the joint – which can contribute to loss of motion.

Anatomy
The knee joint is where the end of the thigh bone (femur) meets the top of the shin bone (tibia) and the knee cap (patella). The femur and tibia are connected by a set of muscles and
ligaments, of which our thigh (quadriceps) muscles are primarily responsible for straightening the knee.

The knee joint is cushioned by cartilage that covers the ends of the femur and tibia, helping them to move smoothly against each other. On the tibia lie two crescent-shaped pieces of cartilage called menisci. The menisci act as shock absorbers for the knee. They also provide a pocket-like surface on the top of the tibia for the femur to sit in. This pocket increases the stability of the knee and prevents it from sliding around during activities.

In a knee joint that has osteoarthritis (Arthritic Knee), the cartilage wears down and bone begins to rub on bone. This creates pain and reduces the function of the knee.

Introduction to Total Knee Replacement
Before recommending surgery, your doctor may have considered other treatments for your knee pain. Total knee arthroplasty (commonly known as TKR) is one of the most successful treatments to restore knee function and stop arthritic pain, and may be recommended by your doctor.
The goal of the surgery is to replace the arthritic surfaces of the bones with smooth artificial surfaces made of metal and plastic. These new surfaces are designed to closely mimic normal knee function, while also preventing pain caused by the damaged ends of the bones rubbing together.

Precision instruments are utilized to reshape the ends of the bones to accept the artificial knee implant. A metal “tray” is placed on top of the tibia. An implant-grade plastic (polyethylene) insert is locked into the top of this tray. The plastic now acts as the cushioning cartilage and menisci. Next, a highly polished, implant-grade metal component is placed on the end of the prepared femur. Finally, the underside of the patella (knee cap) may be removed and replaced with a plastic dome which will slide against the new joint.
The Science of Total Knee Sizing

A new trend in the orthopaedic marketplace is total knee implant designs based on gender differences. The idea is that men and women have different knee anatomies which require different prosthetic designs. It was once believed there were a few key differences between the typical knee anatomy of men and women. In women, the knee cap was believed to travel along a differently angled path (patellar track angle) as the knee is bent and straightened, and that a woman’s femur was smaller than a man’s.

There are several studies demonstrating an anatomic difference between men and women. However, few of these studies have taken the height, or physical stature, of the individuals into account. Those studies that have included other factors besides gender
have found that the patient’s height and skeletal structure, not gender, determines anatomical differences. Research has shown patellar track angle is not different due to gender, but is actually different due to the height of the individual. If a man and woman of equal height and similar skeletal structure were measured, their knee caps would theoretically travel at the same angle. The EVOLUTION® Medial-Pivot Knee System was designed with this in mind. As with any surgery, complications may occur. See page 14 for potential risks of knee replacement surgery.

It is common for a shorter person’s knee cap to be thinner than a taller person’s. Once again, studies have found this is not due to gender, but due to the differences in average height between men and women. Increased height brings increased knee cap thickness. The EVOLUTION® knee component features certain sizing which enables the knee cap to move more freely in smaller patients, regardless of gender.
It is also believed that women require a more contoured implant than a man to fit their narrow femur. However, it is not uncommon for men to have a narrow femur as well. Instead of a knee made just for women, the EVOLUTION® Knee may be implanted in men or women with a narrow femur. A study showed that most implants were about 5mm too wide for women. For this reason, the EVOLUTION® Knee includes components sized as much as 5mm narrower than traditional knee implants to better fit the anatomy of those with a narrow femur.
Less Invasive Knee Surgery
Ideally, a less invasive surgical approach allows your surgeon to avoid moving your patella or cutting key muscles or tendons. This type of surgery is also referred to as a tissue-sparing procedure, which is designed to affect less underlying tissue than in traditional knee surgery.

Less invasive surgery (LIS) may be performed with various surgical approaches, but requires smaller instruments due to smaller skin incisions. However, the length of the incision is not what is truly important. What matters is how the surgery affects the thigh (quadriceps) muscles, which are responsible for straightening your knee.

Although it is less invasive by definition, LIS is still a major procedure. In addition, depending on the condition of the joint, not every patient is a candidate for LIS surgery. Your surgeon can help you make that decision. The rehabilitation protocols and risks associated with LIS cannot be expected to greatly differ from traditional surgery. Both depend on several variables. See page 14 for potential risks of knee replacement surgery.

EVOLUTION® Knee Instrumentation
Wright’s EVOLUTION® Knee Instrumentation was designed to accommodate surgeons performing tissue-sparing techniques within smaller incisions (usually 4-6 inches as opposed to the 8-12 inches of a traditional knee surgery).
While EVOLUTION® Knee Instrumentation is smaller, it features multi-function designs that require fewer steps than traditional instruments. It is important to note, however, that less invasive surgery is not only about the size of the incision, but also the amount of soft-tissue damage (to muscles and ligaments) that takes place below that incision. Wright's instruments are designed to minimize soft tissue manipulation, which may help alleviate pain after the surgery and promote faster rehabilitation, especially if your surgeon's orders are followed.

EVOLUTION® Knee Instrumentation was designed specifically to be used in combination with Wright’s EVOLUTION® Medial-Pivot Knee System.

**Why Would Your Surgeon Select A Wright Knee For You?**

With Wright, both you and your surgeon have options. Wright’s latest knee implants are designed specifically to replicate normal knee motion by bending, rotating, and twisting, while maintaining a high degree of stability. And, your surgeon is empowered to implant Wright products through less invasive surgical techniques.

In addition to over 12 years of clinical experience with medial-pivot knee implants, Wright has patient satisfaction data that tells us our knee products, with medial-pivot technology, are preferred over traditional designs.  

**Who Is Wright?**

Wright is an orthopaedic company with foundations in total knee surgery. Wright’s philosophy has always been to design implants and procedures that preserve as much of the body’s natural structure (bone) as possible.

The research, development, engineering, and manufacturing that has resulted in our EVOLUTION® Medial-Pivot Knee System is unique
and complex. However, this second-generation design, developed in conjunction with top knee surgeons in the US and around the world, is the result of some very simple questions: How can we design the best knee implant on the market? One that will closely mimic the natural motion of the knee’s anatomy? One we would want our family members to receive, if they were facing knee surgery?

**EVOLUTION® Medial-Pivot Knee System**

**Experience Stability™**

While no knee replacement is a perfect copy of a patient’s natural knee function, Wright has designed these knees to closely replicate the rotating, twisting, and stability of your natural knee. In contrast to other knee implants, Wright’s Medial-Pivot Knee design is more stable during knee motion.¹⁰ A normal knee is more complex than a simple hinge; it pivots on its inner (medial) side. And, when the knee bends, the outer (lateral) side rolls back, while the medial side rotates in one place. This is precisely how the EVOLUTION® Medial-Pivot knee implant was designed to move, and how it received its name.
PROPHECY® Pre-Operative Navigation Alignment Guides
Envision the Results™

As part of most knee surgeries, your surgeon will drill into your thigh bone (femur) and shin bone (tibia) to insert a rod. This rod is used to make sure your knee implant components are lined up properly. The use of an alignment rod, temporarily inserted into your bones, has been common practice in traditional knee surgery for a number of years. This surgical practice has been shown to be safe and effective. However, on rare occasions, it has caused complications because the center of your shin bone and thigh bone are filled with a flexible tissue called bone marrow. When the rod is inserted into these bones, bone marrow could be forced into your blood stream. Although very uncommon, this risk could be dangerous to a patient.

In addition, during traditional knee replacement surgery, a sizing instrument is used to determine what size knee implant you will need. Use of this sizer is one of the more difficult steps of the surgery because the surgeon can only see the amount of bone exposed through the surgical cut in your knee.

As an alternative to the traditional alignment and sizing process, Wright has introduced the PROPHECY® Alignment Guides. With PROPHECY® Guides, drilling into your thigh and shin bones is not necessary, and the size of your knee replacement is determined well in advance of your surgery. This reduces the risk of bone marrow getting into your blood stream and makes your surgeon’s sizing process easier.
How it works…

Before surgery, your surgeon will either prescribe a CT or MRI scan of your leg. The scan is then sent to us at Wright. Our engineers use computer programs to turn your scans into a 3-D visualization of your knee bones. With this imagery, our engineers perform a virtual knee replacement on a computer according to your surgeon’s preferences. This allows Wright to generate a surgical plan for your surgeon showing how your knee replacement will fit and what implant size you will need. When your surgeon is satisfied, Wright then creates the PROPHECY® Alignment Guides specifically for your surgery. The geometry of these guides correspond to the surface of your knee bones. The guides assist your surgeon in aligning and positioning your knee replacement components without using the alignment rod.

Everyone’s knees are slightly different. PROPHECY® guides are created to fit only your knee and deliver implant fit and position that your surgeon requests. Even when your surgeon chooses to use PROPHECY® Guides, there are still risks associated with total knee surgery. PROPHECY® Guides are not right for everyone. Ask your surgeon if PROPHECY® Pre-Operative Navigation Alignment Guides are the right surgical option for you.
Patient Preferred
While knee replacement is not a perfect copy of an individual's natural knee function, Wright's Medial-Pivot designs allow patients to receive an implant that more closely mimics their natural knee's motion. We are proud of these unique designs that are made in our high-tech manufacturing plant in the USA.
Additionally, surgeons are empowered to implant our products through tissue-sparing surgical techniques that have been shown to get you back on your feet faster.\(^8\)

Patient Data
In a survey of 344 patients who experienced total knee surgery on both knees (one with a Wright medial-pivot knee similar to the EVOLUTION® Knee, the other with a competitive product design), 80% of the recipients reported that they liked their medial-pivot knee better. And, nearly 75% of those surveyed said it was easier to rehabilitate the knee that was replaced with a Wright medial-pivot knee.\(^{11}\)

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<tr>
<th>Question</th>
<th>Medial-Pivot</th>
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<td>Easier To Rehab?</td>
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<tr>
<td>Easier To Bend?</td>
<td>55%</td>
<td>26%</td>
<td>19%</td>
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Potential Risks of Knee Replacement Surgery
After receiving a knee replacement, you could potentially experience the following: pain; bone or component fracture; need for early revision surgery; poor range of motion; blood vessel damage or blockage; allergic reaction; temporary or permanent nerve damage; a sudden drop in blood pressure during surgery due to the use of bone cement; leg deformity; leg shortening; heart and blood vessel disorders; delayed wound healing; and deep wound infection, which may require removing the implant(s). On rare occasions, fusion of the involved joint or amputation of the limb may be required. Your weight, age, and medical history determine your specific risks. Wright recommends that you ask your doctor if you are a good candidate for knee replacement surgery.
Patients Speak Out
Of course, individual results vary and only your physician can determine what is the best course of treatment for you. However, here’s what some recipients of Wright’s ADVANCE® knees (first-generation medial-pivot design and predecessor to EVOLUTION® knees) are saying …

Don’s Experience

“I was overweight, out of shape, and my physical problems deprived me of things I enjoyed.
Now, I’m back. I’ve got an active future again.”

Don Lambert, 48 years old, received a Wright medial-pivot knee replacement through a minimally-invasive surgical approach.

Since then, he committed himself to physical therapy, lost 70 pounds that he had accumulated, got into shape, and set a goal to climb Mt. Kilimanjaro, which he accomplished.

In his photo at the peak, Lambert is holding a sign that says “Thank You Wright Medical. Your Knee Got Me To The Top.”

“I was pleased at how well the knee performed,” he said. “I really tested it on the mountain and found I relied on it, especially during the descent.”

Lambert said having his knee replacement was one of the best decisions of his life, and he is a strong proponent of “not waiting.”

“If you have a bad knee, now is the time you need it. Why wait?”
Maggie’s Experience

“Before getting my new knees, the only way I could go long distances was in a wheelchair. Now, I can walk without pain.”

The first time Maggie Bala, 60, underwent surgery to treat debilitating arthritis in her right knee, she suffered through a tough recovery with weeks of physical therapy and use of a walker and cane.

Fortunately, advances in surgery made a world of difference in her recovery after having a second surgery, this time to replace her left knee. Maggie’s physician, Dr. Louis Levy, suggested she receive Wright’s medial-pivot knee and was able to surgically implant the device while minimizing cutting of muscles in the area. He used a less invasive technique during the operation that provided great benefits for Maggie. Though not typical, Maggie says she only needed about a week of physical therapy and was able to walk on her own within days of her surgery!

Maggie is thrilled to have knees that are now well enough to allow her to shop, mow her lawn and garden without pain.

Maggie, 60
Virginia’s Experience

“I avoided surgery for fear that I would be disabled at 60. Then, I realized I was actually handicapped at 40.”

Virginia DelGaldo was diagnosed with osteoarthritis when she was 44 years old and her doctor advised knee surgery as the bone was rubbing directly against bone causing her immense pain.

She was scared of getting the operation at such a young age because of the revision surgeries she would potentially need later so she sought multiple medical options. All the physicians she visited came to the same conclusion: surgery.

Virginia saw Dr. Stephen Stuchin and he recommended a total knee replacement with a Wright medial-pivot knee system.

Since having the surgery, Virginia is thrilled with the results. She says the pain is gone and her range of motion is 130°, and the implant feels like her own knee. She can finally exercise again and, as a result, has lost 53 pounds.

“Pain no longer dictates what I can and cannot do. I have my life back.”

Virginia, 44
Frequently Asked Questions

Q. When Is Knee Surgery Appropriate?
A. Only you and your doctor can determine what is the correct course of treatment for you and your condition. Surgery should be the last step and should be considered when other alternatives have proven ineffective and, when knee pain significantly impacts the activity and quality of your life.

Q. What Differentiates the Medial-Pivot Design From Other Implant Designs?
A. Many total knee implants on the market are based on a philosophy that the knee moves like a hinge … swinging only back and forth. But, of course, the knee does not function simply as a door hinge. The knee bends and rotates. The EVOLUTION® Medial-Pivot Knee was designed to more closely mimic the natural knee’s motion.

Q. How Long Does a Knee Implant Last?
A. Unfortunately, there is no easy answer to this question, other than “it depends”. Implant lifespan varies based on the materials it is comprised of (metal and plastic), patient anatomy, as well as, how much “wear and tear” it receives after being implanted.
Prescribing Information & Precautions

Advances in knee implant replacement have given surgeons the ability to assist patients in restoring mobility, correcting deformity and reducing pain. While the implants used are largely successful in attaining these goals, it must be recognized that they are manufactured from metal and plastic. Knee replacement systems cannot be expected to withstand activity levels and loads as would normal healthy bone.

To determine if you are a candidate for knee replacement, discuss your condition with your surgeon. He/she may determine that a knee replacement is appropriate for you if you have severe pain or significant disability resulting from one or more of the following conditions:

**Indications**

- Deterioration of the knee joint cartilage (osteoarthritis).
- Inflammation in the lining of the knee joint (rheumatoid arthritis).
- Physical injury to the knee joint resulting in arthritis (traumatic arthritis).
- Moderate valgus (knock-kneed), varus (bowlegged), or flexion (bending) deformities.
- Correction of problems caused by previously failed surgeries.

**Contraindications**

During consultation your doctor may decide that knee replacement surgery is not appropriate if:

- You have an infection.
- You do not have enough bone or the bone is not strong enough to support the prosthesis.
- You have known metal/plastic allergies.
- Your knee is severely unstable, possibly due to unstable knee ligaments.
- You have one of several conditions known as neuromuscular disease (cases where there is inadequate neuromuscular status).

The indications and contraindications herein are not intended to be an exhaustive list. Additional considerations that may impact the outcome include the patient’s weight, occupation or level of activity. Consult with your physician to determine the correct treatment for you.
References


2. http://cme.medscape.com/viewarticle/420374 Long-Term Results in Total Knee Arthroplasty Mark McBride, MD ; Chritranjan S Ranawat, MD ; VJ Rasquinha, MD


