ZEHR CENTER
ORTHOPAEDICS
...because living with pain isn't really living!®

Total Knee Replacement

Total knee replacement may be the answer to your knee pain from arthritis. When you can no longer function well or tolerate the pain with even simple daily activities, it's time to think about total knee replacement. If the evaluation of your knee by physical exam and a careful review of your X-ray indicates that your knee is extensively worn, you may be a candidate for total knee replacement. If you are getting no relief with the more conservative measures you may be wondering "What can be done now?"

The answer may well be a total knee replacement or a unicompartmental knee done with the most advanced minimally invasive surgical techniques and rapid rehabilitation program available anywhere in the world. As a recognized leader, teacher and innovator in minimally invasive surgical techniques for total knee arthroplasty surgery, Dr. Robert Zehr of the Zehr Center for Orthopaedics has had the opportunity to refine the various aspects of the surgical experience for his patients both in the operating room and in the care postoperatively. He is constantly seeking ways to improve patient outcomes, whether it is better methods to educate a patient, pain management techniques, or new highly technical advancements in his surgical technique or choice of implants!

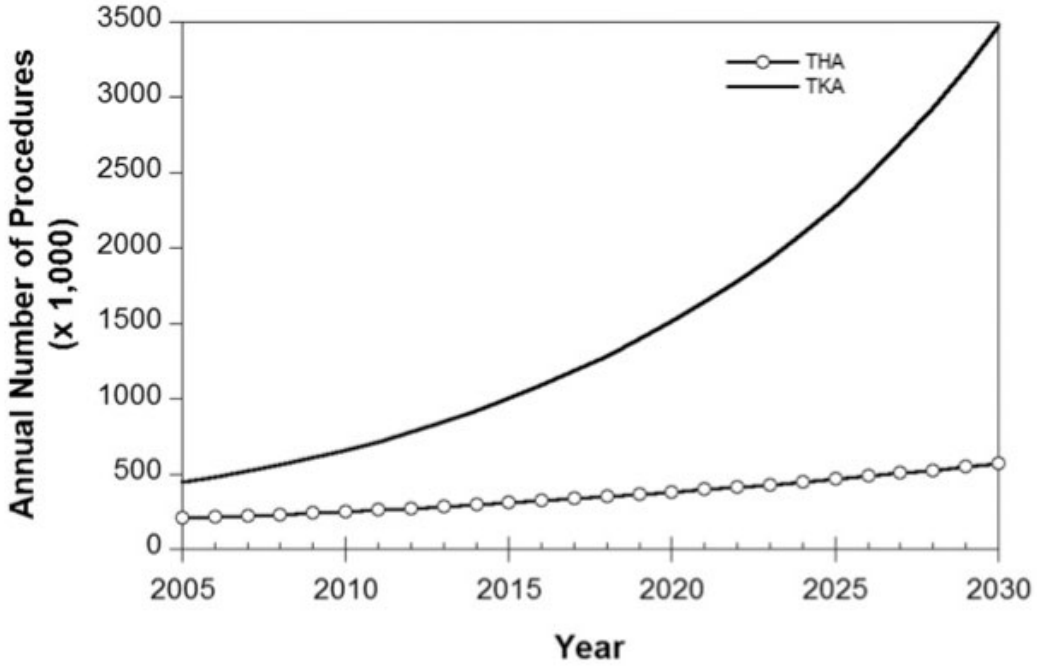
In addition, Dr. Zehr has developed a safe and innovative program to provide total knee replacement as an "outpatient surgery." Younger, healthy patients can completely avoid a hospital setting and its inherent risks. You get your knee replacement and go directly home shortly afterward…the same day! This is the "front edge" of hip and knee replacement technology across the country and is quickly becoming the preferred setting for the young, active, working patient who needs to recover quickly to get back to their family and lifestyle. Same-day outpatient joint replacement surgery is performed at Seaside Surgery Center in Naples, Florida, where Dr. Zehr and his colleagues are setting the bar very high with innovative programs to provide patients the best cutting edge technology available in the country.

Total knee replacements in demand

You should know that knee replacement surgery is really quite common. In fact, last year it is estimated that over 800,000 Americans underwent this highly successful operation to

relieve the pain of an arthritic knee joint. Even more impressive is that number is expected to jump to nearly 3.4 million knee replacements annually within the next 20 years [1]. This will be driven by the combination of a dramatic increase in aging Americans and an ever more demanding younger population who are unwilling to live with debilitating knee pain.

The projected number of primary total hip arthroplasty (THA) and total knee arthroplasty (TKA) procedures in the United States from 2005 to 2030.



Kurtz S et al. J Bone Joint Surg Am 2007;89:780-785

Although it has been commonly and mistakenly thought that total knee replacement is only for the older, Medicare-aged population, it may surprise many people to know that ~50% of all total knee replacements are being done in patients under the age of 65 years [2]. Returning a working-age member of society back to a productive and contributing level has made total knee replacement surgery one of the most highly valued surgical procedures of the past several decades.

In fact a recent study by Ruiz, et al. [3], assessing the direct and indirect costs of lost work and wages, disability payments, and lower earnings; the lifetime cost savings to society for the 600,000 total knees done in the U.S. in 2009 is over $12 billion…that's just for patients done in one year!

With this astounding estimate of patient need for total knee replacement surgery and its recognized value to society, it becomes increasingly vital that each knee replacement implant survive for as long as possible; hopefully for the remainder of the patient's life. It has been generally accepted that of the knees done 20 years ago, over 90% of them are still

functioning today. With an improvement in materials and techniques, it is expected that the survival rate will continue to improve.

Men's vs. women's knees — reality vs. hype

When investigating knee replacement surgery a patient must be careful what they read, and a word of caution is in order. There are many fine knee implants available to you and your surgeon. Typically your surgeon will choose an implant based on his extensive experience, scientific evidence, and past patient outcomes. If there was one design of knee that worked far better in a woman or a man, most certainly all surgeons would use that implant. As it is, no such "Excalibur" implant exists, but there are many implants by several reputable manufacturers that will work very well for you.

Unfortunately, there continues to be heavy marketing by one manufacturer that there is a "Woman's Knee" or a "Gender-Specific Knee" that works better for women. This marketing implies that all of the other knee implants are really men's knees that are being forced to fit a woman's unique anatomy. What you should know is that in this country more than 60% of knee replacements are done in women and to that extent it makes sense for a manufacturer of implants to focus on this part of the market.

The truth is that a woman's knee anatomy IS slightly different from a man's knee, but with the current implant designs, virtually every manufacturer makes its implants in multiple sizes. Results supported by the majority of scientific studies indicate that the "unisex" approach of implants works equally well in women as they do in men. It would be worth your time to review one of the award-winning studies among many which investigate the misleading claims of superiority of the "gender-specific knee". This study emphatically concludes that "the data refute the hypothesis of inferior clinical outcome for women following total knee arthroplasty when using standard components."

The fact remains that knee replacement surgery is not perfected as yet and the outcome studies indicate a small yet reproducible number of patients, both men and women, dissatisfied with their outcome. It does not seem to make any difference which implants are used. Surgeons, manufacturers, and therapists are all working hard to improve these outcomes even further, but for now total knee replacement surgery remains one of the best options for a patient whose knee has deteriorated to the point they can no longer do the things they enjoy. Fortunately, the vast majority of patients who undergo knee replacement each year — some 800,000 — are extremely pleased with their results and are able to get back the lives that were in slow gear because of their arthritic knee.

Pain control after knee replacement surgery

As most patients have heard from friends or family, knee replacement surgery can be quite uncomfortable, if not extremely painful. It is also clear that if pain is not managed well, the patient will be unable to properly rehabilitate their new knee. In fact, one of the most

common complications of knee replacement surgery is post-operative stiffness. Most typically the stiffness occurs as a result of the patient's inability to adequately participate in the vigorous physical therapy required to regain motion and function.

Fortunately, much has been discovered about pain control in the past 10 years. We know that pain is perceived in multiple locations, including the knee, spinal cord, and several areas within our brain. To that end, controlling pain requires treating all these various areas adequately with various medical and mechanical modalities — a so called "multi-modal" approach.

Along with providing superior surgical skills and the most modern technological advances to afford you with the best functioning knee replacement, Dr. Zehr and his team do everything possible to control the pain that typically occurs with knee replacement surgery. This is important so that you are able to get up walking within a few hours after surgery is completed.

Pain management begins before the surgical procedure is even started, and a variety of medications are given, both in the operating room and shortly afterwards in recovery, to control pain, nausea, and fatigue. The intense pain of knee replacement surgery subsides quickly for most patients and a more manageable level of pain can be controlled with low level narcotic and anti-inflammatory medication within days to a week for most patients.

Minimally invasive knee replacement surgery

Over the recent years, many surgeons have been able to reduce the surgical incision when performing a knee replacement surgery. Cutting less of the surrounding tissues in the knee affords the patient less pain and a quicker recovery. Still, it is estimated that only 20% of surgeons actually use minimally invasive techniques routinely for a total knee replacement surgery.

A typical total knee procedure performed by Dr. Zehr over the years has been through a "**minimally invasive, quad-sparing approach**" with a 4″ skin incision. The quadriceps tendon is not cut, and the patella is not everted, both are important in lessening the pain of this procedure. Additionally, the use of a long-acting analgesic cocktail that is injected into the knee at the end of surgery combined with an aggressive physical therapy program designed to get the patient up walking the same day of surgery has shown to be one of the most important protocols for controlling pain and restoring function rapidly to the knee.

Dr. Zehr's fit and healthy patients are usually able to return to normal activities such as golf, biking, swimming, doubles tennis, and long distance walking in just 4 – 6 weeks after surgery.

Included below is an animation of the steps involved in total knee replacement surgery to provide some basic understanding of the complex procedure. In addition, and perhaps more useful, is the video documentation of the surgical technique used by Dr. Zehr for implanting total knee replacements.

Below are pre-op / post-op X-rays of an arthritic knee which underwent a total knee replacement.

References

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